

**Exhibit 10 to the Declaration of Dean M. Harvey
in Support of Plaintiffs' Opposition Briefs**

**Expert Witness Report of
Kevin F. Hallock**

October 27, 2013

REDACTED VERSION

In re High-Tech Employee Antitrust Litigation

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I. Qualifications

1. I am the Donald C. Opatrny '74 Chair of the Department of Economics, the Joseph R. Rich '80 Professor, Professor of Economics and Human Resource Studies, and Director of the Institute for Compensation Studies at Cornell University in Ithaca, NY. I am also a Research Associate at the National Bureau of Economic Research in Cambridge, MA and a Distinguished Principal Researcher at The Conference Board in New York, NY. Additionally, I serve on the Compensation Committee of Guthrie Health in Sayre, PA and on the Board of Directors of the Society of Certified Professionals at WorldatWork in Scottsdale, AZ. I earned a B.A. in Economics from the University of Massachusetts at Amherst in 1991, a M.A. in Economics from Princeton University in 1993, and a Ph.D. in Economics from Princeton University in 1995. I previously taught at the University of Illinois at Urbana-Champaign from 1995-2005 and have been at Cornell University since 2005.

2. My work has covered a variety of fields including compensation design, executive compensation, the relationship between labor and financial markets, wage differentials and inequality, the effects of job loss, and labor economics. My work has been published in a variety of outlets including *The American Economic Review*, *The Journal of Economic Perspectives*, the *Journal of Labor Economics*, the *Journal of Public Economics*, the *Journal of Corporate Finance*, *Labour Economics*, the *Industrial and Labor Relations Review*, *Research in Personnel and Human Resources Management*, and *Research in Labor Economics*. I have edited or co-edited a variety of volumes including co-editing *Labor Economics* (1995) and *The Economics of Executive Compensation* (1999). My book regarding compensation, *Pay*, was published in 2012. It was awarded Princeton University's Richard A. Lester Award for the Outstanding Book in Industrial Relations and Labor Economics in 2012.

3. I have served as a referee for over 40 different academic journals. I previously served as an Associate Editor at the *Journal of Labor Economics* and at *Economics Bulletin* and am currently an Associate Editor at *Labour Economics*, am on the editorial board of the *Industrial and Labor Relations Review*, and am on the advisory boards of the *Journal of Organizational Effectiveness: People and Performance* and *Compensation and Benefits Review*. I have given lectures at over 30 different Universities. I have taught courses at Cornell on Managing Compensation, Executive Compensation, Pay, Finance for Human Resources, and Labor Economics. In 2013, I was elected a Fellow of the National Academy of Human Resources. A more complete description of my qualifications is included in my curriculum vitae in Appendix A.

4. In connection with this matter, I reviewed and considered materials from this case, including the consolidated amended complaint, depositions, deposition exhibits, and salary or market pay range materials produced by or compiled from materials of each Defendant. Information that I considered in forming my opinions include the items listed in Appendix B or listed in this report and any attached exhibits. The bases for my opinions are described in this report and any attached exhibits. I reserve the right to supplement this report in view of any new material or information provided to me after the date of this report.

5. My compensation for my work in this matter is not contingent upon my findings or the outcome of this litigation. I am being compensated at my current hourly rate of \$750 per hour.

II. Assignment and Summary of Conclusions

6. I understand that plaintiffs are representing a class of salaried technical, creative, and research and development employees (the “Class”) consisting of those described in

Appendix B to the October 1, 2012 Expert Report of Dr. Edward E. Leamer, and who worked for a Defendant while that Defendant participated in at least one “no cold-call” agreement with another Defendant.

7. I have been asked by counsel for the plaintiffs to:
 - a. Analyze Defendants' pay practices to determine whether Defendants used formal administrative pay systems; and
 - b. Determine whether suppressing recruiting of Defendants' workers, including technical workers, are predicted to have led to the result of suppressing the pay of all or nearly all Class members, including those with different job titles.
8. As a result of my work to date, the following are among my conclusions.
 - a. The Defendants had formalized compensation systems. These include using market surveys, using survey data, having clear structures, grades and many other features of formalized compensation systems.
 - b. The Defendants made use of the ideas of compensation beyond salary. These other forms of compensation include components such as bonuses and stock.
 - c. Issues of internal equity and equity in general were important to Defendant firms. Whether they used the terms or not, the concepts of internal equity and also generally treating similar employees similarly were important to Defendant firms.
 - d. There is documented evidence that pay moved in Defendant firms in systematic and structured ways.

- e. A compensation system that includes pay for performance is not mutually exclusive from one that takes internal equity into account.
- f. Restrictions on cold-calling clearly had impacts on employees among the Defendant firms. In particular, restrictions on cold-calling hamper compensation levels for employees. The restrictions could be expected to hamper levels of compensation for those who would have been cold-called and for all or nearly all Class members of Defendant firms.
- g. Agreements such as restrictions on cold-calling could be expected to limit and have negative consequences on employee compensation for those workers directly involved and for nearly all Class members. Given the formalized pay structures, use of external market data, and compensation design in Defendant firms, nearly all Class members could be expected to have pay that would otherwise be higher.
- h. The formalized systems in place at the Defendants relied on structures, external data from the market and the like, and notions of equity were present at Defendants. As a result, those effects cycle on to other employees and their levels of compensation. Therefore, the formal compensation structures could be expected to lead to an effect on nearly all Class members.
- i. Although I have not been asked to estimate the magnitude of damages in this case, based on my knowledge of compensations systems and the materials considered, I believe that agreements against cold calling, such as the agreements at issue in this case, are predicted to suppress the

compensation of all or nearly all members of the Class, including those with different job titles.

III. Prior Testimony

9. I have testified at a deposition three times, including once in this case, and have not testified at a trial. During the previous four years, I have testified as an expert at a deposition in two cases: *William Hale Hubbell vs. G.J. Ratcliffe, Richard W. Davies, Andrew McNally IV.*, *individually and as trustees* and, in May 2013, in the current matter. This current case is the first time I have testified as an expert in a class action lawsuit.

IV. Compensation System Design

10. Many firms use administrative pay systems.¹ These systems typically include standardized features, such as job analysis, job evaluation, use of market surveys and external market data, and salary bands and zones or grades and ranges. This section briefly outlines some features of these systems.

11. It is noteworthy that an important feature of these systems is that often the internal structure is set in advance of using external compensation information. When setting up these systems the internal structure is set and then external data is then matched to the internal structure to set pay levels.

12. Many organizations have a business strategy that is then linked with a compensation strategy and philosophy. Organizations often start with their own compensation strategy, which of course can evolve over time, before setting up the more technical features of the pay system.

¹ See, for example, Milkovich, Newman and Gerhart (2011, 2014), Martocchio (2004), or Hallock (2012).

13. Job analysis is the “systematic process of collecting information that identifies similarities and differences in the work”.² Harvey (1991) notes two important features of job analysis. First, job analysis should describe observable characteristics of jobs. Second, individual people in those jobs should be kept separate from the job analysis. To be sure, individual differences matter in compensation design but are not used at this point in the evolution of a compensation system.

14. Job analysis can become very specific and detailed. In fact, Martocchio (2004) points out very specific details of job elements in job analysis such as element, task, position, job, job family, and occupation.³ This begins with an “element,” which could be as simple as putting a piece of paper in a scanner to scan a document all the way up to a “job family”. The rest of the list from Martocchio (2004) just aggregates to higher and higher levels. A “Task” is the next up from an element. A position is a group of tasks that make up the activities that a specific employee might perform. For example a junior administrative assistant might make flight reservations, distribute mail, answer phones and perform related activities. A job may be reflected in a set of positions. For example, there might be many different junior administrative assistants all doing a very similar job. The job family is the next level up.⁴ A job family might be administrative jobs, or technical jobs, or marketing jobs. Different organizations may do this differently. Overall structure is what is important.

15. An additional step in performing a job analysis involves collecting information on job content (e.g. tasks, activities, work demands), characteristics of employees who hold these sorts of jobs (e.g. technical skills, manual dexterity, leadership), internal relationships (e.g.

² Milkovich, Newman and Gerhart (2011), p. 97.

³ Martocchio (2004), page 198.

⁴ Hallock (2012), page 63-64.

supervisors, peers), and external relationships (e.g. regulators, customers, suppliers).⁵ Henderson (2006) describes a series of examples of questionnaires that are used by firms to collect this kind of information in their organizations. O*NET⁶ -- a revision of the U.S. Department of Labor Dictionary of Occupational Titles -- is an example of these systems. O*NET has extraordinary detail on the characteristics of hundreds of jobs but includes a set of overarching descriptors: knowledge, skills, abilities, work activities, interests, work content, and work values.

16. Job evaluation in the next step in setting up a pay system using a job-based structure as described here. Job evaluation “is the process of systematically determining the relative worth of jobs to create a job structure for the organization. The evaluation is based on a combination of job content, skills required, value to the organization, organizational culture, and the external market. This potential to blend organizational forces and external market forces is both a strength and a challenge of job evaluation”.⁷

17. Companies use a variety of approaches to identify relative differences in their jobs before benchmarking them to external data. There are several ways to order or rank jobs relative to one another inside an organization.⁸

18. Internal comparisons among workers are clearly important to workers and to organizations. This is the case both when organizations are organizing their structures and when making individual pay decisions. Organizations are also concerned with individual pay comparisons, pay and equity, and internal equity, as confirmed in this case at each Defendant organization, documented below.

⁵ Milkovich, Newman and Gerhart (2011), Hallock (2012) and others discuss these issues.

⁶ See <http://online.onetcenter.org>.

⁷ Milkovich, Newman and Gerhart (2011), pp 129-130.

⁸ For example, there is evidence that Pixar refers to an “Engineering Job Matrix” where it lists six levels each of “knowledge,” “job complexity,” “supervision & collaboration” and “experience” (see Engineering Job Matrix, Pixar, PIX00049042, exhibit 1305). This is related to what is known as a point method where compensable factors are articulated and jobs are essentially ranked on the basis of points each.

19. Internal comparisons are also studied by academics from different disciplines.

These include a set of studies on fairness (Levine, 1993), and pay secrecy (Milkovich and Anderson, 1972, Lawler, 1967, and Card, Mas, Moretti and Saez, 2012).

20. A next step in a formal pay system is to match the set internal structure to external market data. This is something that Defendants in this case have done for many years. Finding the right market data and the appropriate survey is described in the literature, including Cardinal and Florin (2012). Benchmark jobs are important since they are jobs that will ultimately be used to match the internal structure that has been identified. However, even in the absence of perfect benchmark jobs, formal pay systems can operate.

21. An example of using hypothetical external market data is shown in Figure 1. I created all of the data in Figure 1 for purposes of illustration. In a real-world example, the data in the figure could be provided by, for example, an external consulting company to match to a set of nine real-world jobs. For each of the nine jobs⁹, 1 - 9, displayed in Figure 1, I have reported a set of hypothetical observations of external market data, each represented by an open circle.

22. Companies often want to know certain statistics that come from the data, for example the median (middle) point in the data, or other percentages. In addition to the median (yellow circle), I have reported the 10th percentile (the point at which 10 percent of the data are lower, as a red “+”) and the 90th percentile (the point at which 10 percent of the data are higher, as a green “+”) of the hypothetical data.

23. After the external market data are overlaid on the internal structure, a “market pay line” can be created. This can be done in a number of ways, including by creating the “line of best fit” through the data. In some cases, the line is simply the “ordinary least squares regression line”. It is the line that minimizes the sum of the squared distances from each point and the line.

⁹ These could also be job categories (broader than jobs).

This can show how the company pays, given its strategy, system for ranking jobs, and internal and external market forces.

24. The market pay line is effectively showing, given the external market, how this company will pay at a point for a given job.¹⁰ It can also help companies consider how to pay for jobs for which market data are not readily available.

25. Even in a formal pay structure, it is likely that not all people doing the same job within a firm are all paid the same salary. There are a wide variety of reasons for this. This is one reason why, in a final stage, firms create bands and zones or grades and ranges or other systems to essentially put “boxes” around each type of job.¹¹ A clear example of this is the system for some Technical Jobs at Google in 2004.¹²

26. Figure 2 displays the information as of January 13, 2004 for Google Technical workers in job grades 1 – 9.¹³ (Note that these are not the same points along the horizontal scale as the hypothetical example in Figure 1). Figure 2 has features that are consistent with models taught in compensation textbooks such as Milkovich, Newman and Gerhart (2011),¹⁴ including that the grades increase from left to right, that there are range minima and range maxima for each job grade [REDACTED]

[REDACTED]¹⁵

27. Many organizations use various versions of what I have outlined in this section.

¹⁰ Note the explicit reference to a “Pay Line” in powerpoint on pay design, LUCAS 00188717, exhibit 715.10 and reference at Intel to “pay lines” in powerpoint called FY11 Preliminary Pay lines development update, May 5, 2010, 76582DOC000004_000004, exhibit 399.4. See also references to “pay line” in 2008 Focal Development Process Overview, 76582DOC000348, page 4 (Intel).

¹¹ See Milkovich, Newman and Gerhart (2011), page 265.

¹² See spreadsheet GOOG-HIGH-TECH-00221513.xlsx, tab “Employee Data”.

¹³ Created from data in spreadsheet GOOG-HIGH-TECH-00221513.xlsx, tab “Employee Data”. A related example from Intel showing ranges and pay lines is contained in the powerpoint “Base Pay Management Overview,” Exhibit 2043.14.

¹⁴ See, for example, page 265 of Milkovich, Newman and Gerhart (2011) in Exhibit 8.17.

¹⁵ Note, however, the horizontal axis for each job grade has some width so it is a “box” with a top and a bottom. But it can be characterized as a vertical line with no width, as in many subsequent figures.

28. So far I have been focused on salaries. Wage and salary income is an important and large part of labor compensation. But there are other components in total compensation, including bonuses, stock, stock options and other pay.

29. There is evidence that total compensation is correlated with salary. For example,

[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]¹⁶ Elsewhere I will show the higher the job level the higher the salary in multiple organizations. Figure 3 is one example of guidelines suggesting higher level jobs being given more equity grants.

30. An additional example of the link comes from an Apple Spreadsheet.¹⁷ In this spreadsheet, [REDACTED]. With respect to this sheet, Apple Senior Director of Compensation Steve Burmeister was asked, “... [REDACTED]

[REDACTED]”.¹⁸ In Figure 4, I plot information from this sheet¹⁹ and use only three columns of the data from 2006: [REDACTED]

[REDACTED] In Figure 4, I have plotted three panels. In the first, it is clear that [REDACTED]

[REDACTED]. To create the panel in the top right of the figure, I first calculated a new variable which is the “nonbase” cash which I defined as (total cash) minus base. The top right panel plots this ratio against total cash compensation.

¹⁶ Powerpoint, Apple Inc., Compensation Committee, Apple, August 5, 2009, 231APPLE10067, exhibit 1854.5.

¹⁷ Excel spreadsheet, Apple Computer, Inc., 2006 Compensation Analysis, APPLE 231APPLE098912, exhibit 1858.2.

¹⁸ Deposition of Mr. Steven Burmeister, Apple, March 15, 2013, page 112.

¹⁹ Excel spreadsheet, Apple Computer, Inc., 2006 Compensation Analysis, APPLE 231APPLE098912, exhibit 1858.2.

Clearly [REDACTED]. In the bottom left panel, I plot the bonus percentage against the base salary for [REDACTED]
[REDACTED]
[REDACTED]

31. There is substantial evidence in general, that stock (e.g. stock, stock options) as a fraction of total compensation is correlated with job level and salary.²⁰

32. There can be important credential effects to certain phenomena in labor markets, such as being associated with a college degree or being associated with well-known organizations. There is a large literature in economics on the economic returns to education (e.g. Card, 1999, 2001). There is also a literature on estimating the difference between productivity and the signaling effect of education on earnings (e.g., Spence, 1973, Hungerford and Solon, 1987 and Weiss, 1995). For example, do those with high levels of education have higher earnings because they learned more in school and are, therefore, more productive workers, or is the credential of the educational institution a signal to employers of their high ability or work ethic? Just as there could be signaling and productivity effects of education on earnings, there too could be productivity and signaling effects of the employer brand on earnings and future earnings. For example, working for a high-profile or well-known employer, including any of the seven Defendants, could have positive benefits to an employee including monetary and non-monetary compensation in the future.

V. The Defendants Had Formalized Pay Systems

33. There is evidence in the testimony and documents I reviewed in this case that the Defendants each had formalized or sophisticated human resource (HR) or compensation systems

²⁰ See, for example, Hallock (2012), page 92, for an example of the link between CEO cash compensation and CEO total compensation (including equity).

of one type or another. The systems may not contain all features of the example I outlined above but they are certainly formalized compensation systems, as evidenced, for example, by their use of jobs, job families, grades, salaries, ranges, and benchmark data.

34. **Adobe:** There is evidence that Adobe had formalized compensation systems.

Included among the evidence that Adobe had formal structures is data Adobe produced to plaintiffs.²¹ That information shows that Adobe had many job families, many grades within job families and many job titles within grades. Additional data include a variety of compensation structure features including salary min, mid and max information.²²

35. Additional evidence that Adobe had formalized pay systems is contained in the deposition of Ms. Donna Morris, Vice President of Global Human Resources until March 2007, when she became Senior Vice President of Global Human Resources. Ms. Morris noted with respect to salary ranges “So if they’re below the salary range, first we look to ensure that they’re actually even in the right job level. … In times when people have actually fallen outside of the range because the range is moved aggressively, and that’s happened more frequently in India than any other geography, then we have had times when we will adjust people to the minimum of the range to ensure that they’re within the salary range”.²³

36. Ms. Morris also testified, “It’s not as typical for people to be above the range, but if they are, same thing. Should they actually be at the next level up? So that review’s done”²⁴

37. Ms. Morris similarly affirms in her declaration, “The target [salary] midpoint has changed over the years and varied across job functions. For example, the 2005 target midpoint for various jobs is set forth in Exhibit 1 (ADOBE_015864), which is a true and correct copy of

²¹ See spreadsheet “Employee Type Count by Employer”.

²² Spreadsheet, “Adobe_Salary Ranges” (2002-2006); “ADOBE_DATA_000043_SalaryRanges_FY2008” (2008); “ADOBE_DATA_000044_SalaryRanges_FY2009” (2009); “ADOBE_DATA_000045_SalaryRanges_FY2010” (2010).

²³ Deposition of Ms. Donna Morris, Adobe, August 21, 2012, page 154.

²⁴ Deposition of Ms. Donna Morris, Adobe, August 21, 2012, page 155.

Adobe's 2005 Performance, Salary & Stock Focal. The maximum and minimum of the salary range was then calculated by applying a spread, which also varied over the years and across job levels. The spread varied between 50% and 70% for different job levels during the class period".²⁵

38. Additional evidence that Adobe had formalized compensation and HR systems comes from the deposition of Ms. Rosemary Arriada-Keiper, who served as Adobe's Manager of Global Compensation, and was asked "Does Adobe ever bring individuals whose base salaries are lower than the low end of their salary range up to minimum as part of the focal process?" ("Focal" was the name of the compensation review process at Adobe). She replied "So, yeah. Each range has a minimum and a maximum. If folks are below the minimum of the range, we will typically red flag them. That, to us, you know, can mean a number of things. It can mean that the market has moved significantly and we haven't been able to keep up from an individual perspective. Sometimes it's a skill gap issue. So, you know, our practice has been is, is we will adjust them to the minimum as part of the annual review, they get red flagged, and then we have a conversation with the manager to say, you know."²⁶

39. As an example of the structure at Adobe, Ms. Arriada-Keiper mentioned her own career progression in the company. She said "So no, it was – analyst, senior analyst, program manager, career level manager, senior level manager, director. So just moving up in levels right? We have lots of levels at Adobe".²⁷

40. Additional evidence that Adobe had formalized compensation and HR systems was in reference to the "salary planning tool". Ms. Arriada-Keiper was asked "...can you tell me

²⁵ Declaration of Ms. Donna Morris of Adobe, September 13, 2011, exhibit 416.7.

²⁶ Deposition of Ms. Rosemary Arriada-Keiper, Adobe, March 28, 2013, page 24.

²⁷ Deposition of Ms. Rosemary Arriada-Keiper, Adobe, March 28, 2013, page 31.

how the salary planning tool has worked?”²⁸ She replied, “Yeah. So essentially the salary planning tool is populated with employee information for a particular manager, so the employees on their team. You have the ability to kind of look at their current compensation. It shows them what the range is for the current role that they’re in … The tool also has the ability to provide kind of the guidelines that we recommend in terms of how managers might want to think about their specific allocated budget”.²⁹

41. Additional evidence that Adobe had formalized HR and compensation systems is from the deposition of Mr. Jeffrey Vijungco, Adobe’s Director of Talent Acquisition, who was asked, “Well, was – in determining base compensation, were the – were ranges of base compensation established for particular job levels of job titles?” He answered, “There is, you know, levels and ranges for every single job at Adobe”.³⁰

42. Additional evidence of formalized systems at Adobe is from the deposition of Mr. Bruce Chizen, Adobe’s President and CEO from 2000 to 2007, who noted, “For every position, we would have a salary range. So depending on a person’s individual experience, their role and responsibility, the job would pay externally between X and Y according to the data we had, and we said philosophically we wanted to pay within the X percent and Y percent of that range”. He went on to say, “And I wanted to make sure we were staying within that relative philosophy. There were always exceptions. Acquisitions, people who had incredible talent and were really providing a bigger role than their title did, so there were always exceptions. But for the most part, I took responsibility philosophically to comply with what I believed to be the right thing to do”.³¹

²⁸ Deposition of Ms. Rosemary Arriada-Keiper, Adobe, March 28, 2013, page 82.

²⁹ Deposition of Ms. Rosemary Arriada-Keiper, Adobe, March 28, 2013, pages 82-3.

³⁰ Deposition of Mr. Jeffrey Vijungco, Adobe, October 5, 2012, page 29.

³¹ Deposition of Mr. Bruce Chizen, Adobe, March 15, 2013, page 96.

43. Adobe also used external market data. Mr. Chizen testified that salary ranges were informed by market data. “We – we relied heavily on external data. So it – I don’t – I don’t know which ones, but Radford would be an example of that, the Radford data”.³²

44. There is also evidence that Adobe focused on particular markets for benchmarks. For example, Mr. Chizen was asked if there were particular markets that Adobe used as benchmarks or guidelines for setting salary ranges. He responded affirmatively, explaining, “I don’t know specifics, but they tended to be software, high-tech, those that were geographically similar to wherever the position existed”.³³

45. Adobe also used market surveys, gathered by Adobe’s “Total Rewards organization”.³⁴

46. Additional evidence that Adobe had formalized HR and compensation systems comes from evidence of their systems of “ranking” employees as “High Performer,” “Solid Contributor,” and “Low Performer”.³⁵

47. Adobe also had a salary range website for managers. Ms. Arriada-Keiper testified, “So a salary range website is a tool that we have available to managers whereby they can look at a salary range for an associate job”.³⁶

48. **Apple:** There is evidence that Apple had formalized compensation systems.³⁷ Additional data include a variety of compensation structure features including salary min, mid and max information.³⁸

³² Deposition of Mr. Bruce Chizen, Adobe, March 15, 2013, page 97.

³³ Deposition of Mr. Bruce Chizen, Adobe, March 15, 2013, page 98.

³⁴ Deposition of Mr. Jeffrey Vijungco, Adobe, October 5, 2012, page 31.

³⁵ Powerpoint, Adobe, Q1 Workforce Metrics, As of 4 March 2005, Adobe, ADOBE_000622, exhibit 210.12.

³⁶ Deposition of Ms. Rosemary Arriada-Keiper, Adobe, March 28, 2013, pages 159-60.

³⁷ See spreadsheet “Employee Type Count by Employer”. “FY07 U.S. Base Pay Salary Structures,” 231APPLE007258-59 (2007); Spreadsheet, “Apple Titles and Grades” and Spreadsheet, “Apple Titles and Grades by Year”.

³⁸ See, for example, Base Salary Structures, Apple, Effective July 15, 2008, 231APPLE009282, exhibit 268.5.

49. Additional evidence that Apple had formalized HR and compensation systems comes from a document that lists [REDACTED]

in Figure 5.³⁹ These are shown in the form of graphs in Figure 6.

50. Additional evidence that Apple had formalized compensation and HR systems comes from the deposition of Mr. Mark Bentley, Apple's Senior Director of Recruiting, who was asked, "From time to time, did Apple raise the compensation for a particular job category or job level? He replied "I believe that would be taken – I believe if and when that was done, it was done on an annual basis during compensation planning".⁴¹

51. Mr. Bentley also described the merit process at Apple which is evidence of a formal HR and compensation system. He said, "The merit process is, I think, similar to many

³⁹ Base Salary Structures, Apple, Effective July 15, 2008, 231APPLE009282, exhibit 268.5.

⁴⁰ Base Salary Structures, Apple, Effective July 15, 2008, 231APPLE009282, exhibit 268.5.

⁴¹ Deposition of Mr. Mark Bentley, Apple, August 23, 2012, page 252.

companies. We look at market data, and we come up with a percentage – an average percentage that a pool is funded and to fund the employee – the eligible employee base".⁴²

52. Additional evidence of a formal salary and HR system at Apple is from Senior Director of Compensation Steven Burmeister's deposition. He testified, "My group is responsible for the job structure, the salary range structure, bonus plan design, and equity plan design and administration for Apple."⁴³

53. Mr. Burmeister also noted, "compensation budgets are three main compensation components: base salary, bonus, and stock. And we set the overall compensation budget for these three compensation elements and then provide them to the line of businesses, which then allocate them as appropriate to each of their employees based on performance and contribution".⁴⁴

54. **Google:** There is evidence that Google had formalized compensation systems. That information includes the fact that Google has job families, levels, and grades.⁴⁵ For example, note again Figure 2 which was created from a Google spreadsheet and additional data include a variety of compensation structure features including salary min, mid and max information, grades and job codes.⁴⁶ This spreadsheet documented nine job grades. For each job grade there is information on the "range min," "range mid," and "range max". These refer to the minimum salary in a grade, the midpoint salary in a grade, and the maximum salary in a grade.

⁴² Deposition of Mr. Mark Bentley, Apple, August 23, 2012, page 262-3.

⁴³ Deposition of Mr. Steven Burmeister, Apple, March 15, 2013, page 18.

⁴⁴ Deposition of Mr. Steven Burmeister, Apple, March 15, 2013, page 50.

⁴⁵ Spreadsheet: "Google Census Data, 9-Grade Structure," GOOG-HIGH-TECH-00625160 and GOOG-HIGH-TECH-00625200 (2003); Spreadsheet: "Google 2004 Salary Ranges," Exhibit 1600; Spreadsheet: "2005 Global Salary Ranges," GOOG-HIGH-TECH-00625148; Spreadsheet: "Salary Guidelines," GOOG-HIGH-TECH-00625147 (2006); and Spreadsheet: Market Reference Points, GOOG-HIGH-TECH-00182929 (2007-2012). Regarding the final spreadsheet covering the years 2007 through 2012, Mr. Frank Wagner verified that the file contains market reference points for every job family for every job level. Deposition of Mr. Frank Wagner, Google, March 7, 2013, pages 56-59.

⁴⁶ See spreadsheet GOOG-HIGH-TECH-00221513.xlsx, tab "Employee Data."

Google Director of Compensation Frank Wagner testified that he could locate the target salary for jobs at Google through an internal company website. He was asked, “And if you wanted to identify what the target salary would be for a certain job within a certain grade, could you go online or go to some place in your office and pull up what that was for that job family and that grade?”⁴⁷ He answered “Could I do it?...Yes”.⁴⁸

55. Additional evidence that Google had formalized structures is in data Google produced to plaintiffs.⁴⁹ That information shows that Google had many job families, many grades within job families and many job titles within grades.

56. Google former Senior Vice President of People Operations (HR) Shona Brown also confirmed Google’s use of pay bands with minima and maxima and either means or medians. She was asked “And would your answer stay the same for how Google would determine range minimums and maximums?” she replied “I think my answer is consistent with the creation of pay bands, which for me, that includes mins and maxes, as well as probably some sense of either a mean or a median, whichever approach you are using. People use different ways of doing it”.⁵⁰

57. Google former Senior Vice President of Engineering Alan Eustace confirmed Google’s formalized pay systems in his deposition, including Google’s use of external benchmarking for Google pay. “[The] Compensation group would do surveys across the board of what other companies are paying particular people. They would set up bands of people in

⁴⁷ Deposition of Mr. Frank Wagner, March 7, 2013, page 57.

⁴⁸ Deposition of Mr. Frank Wagner, March 7, 2013, page 58.

⁴⁹ See spreadsheet “Employee Type Count by Employer”.

⁵⁰ Deposition of Dr. Shona Brown, January 30, 2013, page 253.

each of these different areas. They would carefully try to make sure that the job descriptions were, you know, comparable because levels and things varied between companies".⁵¹

58. **Intel:** There is evidence that Intel had formalized compensation systems.

Included among this is evidence that Intel had formal structures in data provided by Intel to plaintiffs.⁵² That information shows that Intel had many job families, many grades within job families and many job titles within grades. Additional data include a variety of compensation structure features including salary min, mid and max information.⁵³

59. Additional evidence that Intel had formalized pay systems comes from a document called "Compensation 201 Instructor Guide" which includes terms such as "salary grades and ranges," "total cash goals," and "the pay letter and how to deliver it effectively".⁵⁴

60. Additional evidence that Intel had formalized HR and compensation systems comes from a document called "Intel Base Pay Comparison Report" which includes mentions of "pay strategy," "pay ranges," "market data," "benchmarking," "grade," "internal equity," and "budgets".⁵⁵

61. Additional evidence that Intel had formalized pay systems comes from the deposition of Ms. Patricia Murray, Intel's former Vice President of Human Resources (1996-2012). She was asked, "Okay. Can you describe for me the general annual process that was used to set compensation?"⁵⁶ She answered, "The annual process had a focal point during which the decisions about compensation were made, but the process went on all year-round. There's a large group of people who are determining salaries based on markets that are all over the world,

⁵¹ Deposition of Mr. Alan Eustace, February 2013, page 132.

⁵² See spreadsheet "Employee Type Count by Employer".

⁵³ Spreadsheet, "SAL_ADMIN_PLAN," 76586DOC001450 (2004 – 2011); Spreadsheet, "Intel Job Titles and Grades".

⁵⁴ Compensation 201 Instructor Guide, Intel, 76583DOC007693, exhibit 2030, page 65.

⁵⁵ Powerpoint, Intel Base Pay Comparison Report, Support Overview, WW04 2011, 765825DOC001211, exhibit 400, page 31.

⁵⁶ Deposition of Ms. Patricia Murray, Intel, February 14, 2013, page 15.

who are sharing data obtained from different surveys and groups, updating us as to how the markets are moving with specific job titles, job categories, geographical markets, and providing us information about all of that. And then we would have a routine process that once a year we would deliver performance reviews and then salary increases in April generally for all employees at large. If – had the data showed something interesting, there may be other times during the year that we would do something with respect to compensation”.⁵⁷

62. There is additional evidence that Intel had formalized HR systems. Intel Senior Vice President of Human Resources Deborah Conrad testified, “Yes, we have a compensation structure”. She explained, “So there are grade levels starting – grade level 2, for example. Goes all the way up to, I think 19. And depending on various skills and experience, you’re assigned a grade level. And as you acquire more skills and take advantage of opportunities and prove yourself, you are moved up into the organization through grade-level promotions”.⁵⁸

63. Ms. Conrad noted that employees in the same job grade could be located in various parts of the structure. “...There were grade 12 engineers, there are grade 12 factory managers. There are grade 12 accountants, grade 12 lawyers. So, yes”.⁵⁹

64. Additional evidence that Intel had formalized compensation and HR systems includes reference to “titles,” “grade,” and “market base”⁶⁰, reference to a list of “30 tech companies generally considered comparable to Intel” and “against which Intel benchmarks compensation”⁶¹, reference to four types of “focal” budgets: “MERIT,” “PROMO/ADJ,” “SMA,” and “TOTAL”⁶² and reference to US Salary Ranges.⁶³

⁵⁷ Deposition of Ms. Patricia Murray, Intel, February 14, 2013, pages 15-16.

⁵⁸ Deposition of Ms. Deborah Conrad, Intel, November 21, 2012, pages 23-4.

⁵⁹ Deposition of Ms. Deborah Conrad, Intel, November 21, 2012, page 34.

⁶⁰ Powerpoint, FSM Pre-Focal Analysis 2007, Intel, January 2007, 76583DOC002007, exhibit 393.13.

⁶¹ Powerpoint, FSM Pre-Focal Analysis 2007, Intel, January 2007, 76583DOC002007, exhibit 393.16.

⁶² Powerpoint, FSM Pre-Focal Analysis 2007, Intel, January 2007, 76583DOC002007, exhibit 393.28.

⁶³ Powerpoint, FSM Pre-Focal Analysis 2007, Intel, January 2007, 76583DOC002007, exhibit 393.19.

65. Additional evidence that Intel had formalized pay systems comes from the deposition of Technology Development Manager Mr. Randall Goodwin who was asked, “And then where you say some justifications for exceptions we made, were you expected to provide justifications for exceptions to what the tool might have recommended?”⁶⁴ He replied, “Yes, in general. If the tool recommended something and we thought we wanted to make a proposed change that was outside its guidelines, we would write some justification”.⁶⁵

66. Additional evidence that Intel had formalized compensation and HR systems came from the deposition of Compensation and Benefits Specialist Daniel McKell. Mr. McKell was asked “Can you list all of the different ratings that Intel uses?” He replied “Currently the ratings are outstanding, exceeds expectations, successful, below expectations and improvement required. Those are the five current ratings”.⁶⁶

67. There is additional evidence that Intel has formalized systems. Mr. McKell was asked “What are the job ranges that Intel currently has?” He answered “Currently job grades range from grade 2 up to 798”. He was then asked “Are there 796 different job grades?” Shortly thereafter he was asked “can you give me an estimate” of the number of job grades? He replied “less than – 100 say”.⁶⁷

68. When Mr. McKell was in grade 6, he received notice of the minimum and maximum of the grade 6 pay range by way of his “focal pay letter”.⁶⁸

69. There is also evidence that Intel referred to job families in their structure. Mr. McKell noted, “... we break jobs into one of three categories – job families, we call them – R&D, tech, and nontech, there’s a lot more ...”⁶⁹

⁶⁴ Deposition of Mr. Randall Goodwin, Intel, March 15, 2013, page 51.

⁶⁵ Deposition of Mr. Randall Goodwin, Intel, March 15, 2013, page 52.

⁶⁶ Deposition of Mr. Daniel McKell, Intel, March 20, 2013, page 47.

⁶⁷ Deposition of Mr. Daniel McKell, Intel, March 20, 2013, page 49.

⁶⁸ Deposition of Mr. Daniel McKell, Intel, March 20, 2013, page 56.

70. Mr. McKell described internal benchmarking: "...Internal to comp and benefits, we benchmark pay against a smaller range, a more job specific range, so the – my project was basically to take that data that we use in our back office and share it with managers without replacing the existing ranges".⁷⁰

71. There is additional evidence of formalized pay and HR systems at Intel. Mr. McKell was asked "Since you have been involved in compensation, have you received from time to time reports "showing whether Intel's job codes are being paid relative to the midpoint of the pay line?" He replied "We do that every year"⁷¹ Mr. McKell also noted, "For the most part, most jobs, we do a pretty good job of keeping, you know, plus or minus 5 to 10 percent of our midpoints".⁷² He was then asked, "When you say 5 to 10 percent of the midpoints, you're talking 5 to 10 percent of the midpoints for the pay lines?" He answered "Yes".⁷³

72. Mr. McKell affirmed at his deposition the statement in his declaration⁷⁴ that Intel "obtained and analyzed survey reports from those vendors to calculate a 'market rate' for each job based on the average compensation for benchmark jobs in each of the grade and job combinations".⁷⁵ Soon after Mr. McKell was asked, "Does Intel calculate a market rate for each of these job combinations?" He replied, "Not necessarily for each and every job. We don't get market data back for each and every job. So for most jobs we do. And so if we have a job where we didn't get a rate back, we can look internally and say, 'Where would we slot it? What would we – what's a comparable job?' Typically, it would be in the same job function".⁷⁶

⁶⁹ Deposition of Mr. Daniel McKell, Intel, March 20, 2013, page 73.

⁷⁰ Deposition of Mr. Daniel McKell, Intel, March 20, 2013, page 87-8.

⁷¹ Deposition of Mr. Daniel McKell, Intel, March 20, 2013, page 90.

⁷² Deposition of Mr. Daniel McKell, Intel, March 20, 2013, page 91.

⁷³ Deposition of Mr. Daniel McKell, Intel, March 20, 2013, page 92.

⁷⁴ Declaration of Mr. Danny McKell, Intel, September 13, 2011.

⁷⁵ Deposition of Mr. Daniel McKell, Intel, March 20, 2013, page 154.

⁷⁶ Deposition of Mr. Daniel McKell, Intel, March 20, 2013, page 155.

73. **Intuit:** There is evidence that Intuit had formalized compensation systems.

Included among this is evidence such as salary low, mid and high information, job codes, and percentiles.⁷⁷ That information shows that Intuit had many job families and many job titles within job families and other features of formal systems.

74. Additional evidence that Intuit had formalized HR and compensation systems is contained in one of the documents that notes a list of codes including [REDACTED]

[REDACTED]
[REDACTED]

[REDACTED]⁷⁸ When Intuit Director of Talent Acquisition Chris Galy was asked about these codes, he confirmed that they cover everybody. “I mean, this is a chart that we use for every offer”.⁷⁹

75. Intuit also indicated other evidence of formal pay structures. Vice President of Human Resources Mason Stubblefield described his responsibility regarding base compensation work. “So I’d say it’s fairly broad from a base compensation perspective. It’s something we think of as job architecture. So the job codes that we use, the job titles that we use, the structure behind that job system that we have really around job codes, job families. And so helping structure that, set that up. The connections from that into the market data and how we provide market reference data to the organization to assist with making compensation decisions; the extension of that into the annual talent and pay process, the merit decisions, performance decisions and managing that process across the company”.⁸⁰ Mr. Stubblefield also noted, “We tried to benchmark every job that we can, and so we’re able to benchmark about 80 percent of

⁷⁷ Spreadsheet: “Market Data,” INTUIT_031024 (2009), INTUIT_048148_2005.

⁷⁸ Powerpoint, FY ’09 New Hire Equity Guidelines, Intuit, INTUIT_039756, exhibit 2140.4.

⁷⁹ Deposition of Mr. Chris Galy, Intuit, March 20, 2013, page 193.

⁸⁰ Deposition of Mr. Mason Stubblefield, Intuit, March 29, 2013, pages 20-1.

our jobs today".⁸¹ In addition, he noted, "If we saw attrition in some area, we'd use – we use retention bonuses proactively to try to secure, lock in, create the incentive for other talent to stay".⁸²

76. Intuit also has formal bands by which jobs are categorized. These include five groups: "Senior Leadership," "Director," "Leadership/Expert Contributor," "Senior Professional," and "Professional".⁸³ Related to that, Mr. Stubblefield noted, "Intuit uses the idea of development bands to help from a learning and development perspective. There are five bands inside the company ... each job that we have fits into a band, and so this is just trying to display how, as you move up in the organization or move through different levels of jobs, the – that does move through our band structure, and also kind of the expectation of the scope ...".⁸⁴

77. **Lucasfilm:** There is evidence that Lucasfilm had formalized compensation systems. Included among this is data provided by Lucasfilm to plaintiffs.⁸⁵ That information shows that Lucasfilm had a variety of compensation structure features including salary min, mid and max information, grades and job titles.

78. Former Senior Director of Human Resources Ms. Sharon Coker testified that Lucasfilm had a salary structure.⁸⁶ "We had – yes, we had identified levels of positions within our salary structure all the way through nonexempt up to the executive level". She confirmed they were maintained in written form, stating, "They were maintained, yes, in a database".⁸⁷

79. Ms. Coker also confirmed Lucasfilm's use of noted job families: "... So production family can start with a production assistant, which is the entry-level position, and

⁸¹ Deposition of Mr. Mason Stubblefiled, Intuit, March 29, 2013, page 25.

⁸² Deposition of Mr. Mason Stubblefiled, Intuit, March 29, 2013, page 70.

⁸³ Powerpoint, Leveraging Compensation and Performance, Intuit, January 7, 2005, exhibit 1761.19.

⁸⁴ Deposition of Mr. Mason Stubblefiled, Intuit, March 29, 2013, page 87.

⁸⁵ Spreadsheet LUCAS00221117 (2007 – 2012).

⁸⁶ Deposition of Ms. Sharon Coker, Lucasfilm, November 1, 2012, page 242.

⁸⁷ Deposition of Ms. Sharon Coker, Lucasfilm, November 1, 2012, page 242.

work all the way up to an executive producer. And that would be what I would call a job family. So it's the production job family".⁸⁸

80. She testified that salary ranges were related to: "...It was almost like an intersection, if you picture the grid. So within a family of jobs, like if you were to look at like technical positions or if you were to look at the production family, I'll stay with that for a moment, there's a hierarchy, if you will, of complexity of roles within a family, and that might be the horizontal part of the grid. The vertical part of the grid would be, you know, how do you level those positions with – across the board, to compare them to people in different job families".⁸⁹

81. There is additional evidence that Lucasfilm had formalized HR and compensation systems. For example, an internal presentation noted "job families," "levels or bands," "job title structure," and "slot incumbents into the framework".⁹⁰

82. Additional evidence of formalized compensation or HR systems include the document reference: "Benchmarking: Lucasfilm will benchmark total cash compensation at the [REDACTED] for most positions, using compensation surveys that are relevant to the specific job or job family. Positions that are defined as highly competitive and/or highly critical to achieving business objectives such as all studio and technical positions are to be benchmarked at the [REDACTED]".⁹¹

83. Additional evidence for formalized systems for compensation and HR at Lucasfilm include a series of competencies and scales. For example, for the function "ADMINISTRATION/PRODUCTION/DIG TECHNOLOGIES" the following levels are listed,

⁸⁸ Deposition of Ms. Sharon Coker, Lucasfilm, November 1, 2012, page 249.

⁸⁹ Deposition of Ms. Sharon Coker, Lucasfilm, November 1, 2012, page 250-1.

⁹⁰ Powerpoint, Global Compensation Project, Lucasfilm Ltd., September 22, 2005, exhibit 944.9.

⁹¹ Powerpoint, PAY FOR PERFORMANCE: 2009 Salary Budget Recommendation, Executive Review, January 21, 2009, Lucasfilm, LUCAS00189288, exhibit 945.13.

“LEVEL I – ENTRY,” “LEVEL II – INTERMEDIATE,” “LEVEL III – SENIOR,” and “LEVEL IV SPECIALIST,” and four sets of competencies are listed “scope/complexity,” “knowledge & skills,” and “Supervision/ Discretion”.⁹²

84. There is additional evidence that Lucasfilm had formalized HR and compensation systems. For example, Senior Manager, Compensation Michelle Maupin was asked in her deposition, “Can you tell me the approximate salary range for grade [REDACTED]?” She answered, “I believe the midpoint, which is what is around [REDACTED]. The low would probably be around [REDACTED], and the high would probably be around [REDACTED]”.⁹³

85. A Lucasfilm PowerPoint presentation has other reference to formalized systems, noting “job grading,” “job match to salary survey data,” and “internal equity/factors”.⁹⁴

86. **Pixar:** There is evidence that Pixar had formalized compensation systems. Included among this is data provided by Pixar to plaintiffs.⁹⁵ That information shows that Pixar had many job titles. Additionally Pixar uses compensation data in percentiles (e.g. 10th, 50th, 90th).⁹⁶

87. For example, Vice President of Human Resources and Administration Lori McAdams noted in her deposition, “We establish salary ranges for each of our positions, and an employee is offered or paid usually within that salary range”. She confirmed, “We participate in salary surveys in the industry and – and in – in various fields, and use that information to determine the appropriate salary range”.⁹⁷

⁹² LUCAS00188750-LUCAS00188753, exhibit 959.43-959.46.

⁹³ Deposition of Ms. Michelle Maupin, February 12, 2013, page 39.

⁹⁴ Powerpoint on pay design, LUCAS 00188763, exhibit 715.56.

⁹⁵ See spreadsheet “Employee Type Count by Employer”.

⁹⁶ See, for example, Survey collection forms: PIX00088222 (2009); Market survey results: PIX00056267 (2009); Matching employees to survey results: PIX00088115 (2009).

⁹⁷ Deposition of Ms. Lori McAdams, August 2, 2012, page 29.

88. Ms. McAdams also noted the structure of the size of the ranges at Pixar: “The lower, more entry-level positions have about 40 to 50 percent range, and the more senior positions can have a 60 to 80 percent range”.⁹⁸

89. Ms. McAdams also noted information about adjustments at Pixar: “Well, the salary range adjustments is something that’s done by human resources so that we have ranges for all of our established positions. And then the managers are provided any updated salary range information so that when they are distributing their salary increase pool, they know if someone is below – you know, they know where their people are in those salary ranges and can provide, you know – can spend their pool accordingly”.⁹⁹

90. Ms. McAdams also was asked about Pixar’s use of salary surveys. “The Croner Survey is an industry specific survey that surveys positions in the animation and visual effects industry”.¹⁰⁰

91. While Croner collects data for a broader collection of companies, Pixar sometimes request subsets of the data. When asked about the minimum number of companies that can be provided by the Croner Survey, Ms. McAdams replied “I think it’s five”.¹⁰¹

92. Information from the Croner Survey, used by Pixar (and other organizations) notes “hierarchy,” “job families,” and “positions,” all terms used in formalized compensation systems.¹⁰²

93. Additional evidence of formal pay systems at Pixar are from Manager of Human Resources Stephanie Sheehy’s deposition. She was asked, “How are base salaries determined for Pixar employees?” She replied, “We use survey data for the most part”. She was then asked

⁹⁸ Deposition of Ms. Lori McAdams, August 2, 2012, page 32.

⁹⁹ Deposition of Ms. Lori McAdams, August 2, 2012, pages 40-41.

¹⁰⁰ Deposition of Ms. Lori McAdams, August 2, 2012, page 60.

¹⁰¹ Deposition of Ms. Lori McAdams, August 2, 2012, page 61.

¹⁰² 2009 Croner Animation and Visual Effects Survey, January 8, 2009, PIX00001263, exhibit 119.

“What do you do with the survey data?” She replied “We use it as a guideline to help us determine the minimum salary/maximum salary for a job”.¹⁰³

94. Ms. Sheehy confirmed Pixar used salary ranges at Pixar”.¹⁰⁴ Later she was asked about job families and replied, “Job families are also called job groups, which I referred to earlier...They’re a grouping of employees that sit together in our structure”.¹⁰⁵

95. Ms. Sheehy also testified that Pixar used both Croner and Radford market survey data. When asked about “the steps that you follow to use that data and make the salary ranges”, Ms. Sheehy answered “Let me think, is there a big difference between them? No, we use them pretty much the same, both Croner and Radford. So we have met with each manager and gotten a match for all the matches that are matchable. The employees that are matchable to a job in one of the two surveys. And we submit our data at certain points during the year. And then when we get our data back, we compare where the employee match range was that – we use the [REDACTED] [REDACTED] as the min and the [REDACTED] [REDACTED] as our max, and where the employee presently is in their salary, what their current salary is, and we see where they land inside that range”.¹⁰⁶

96. Ms. Sheehy also noted job groups at Pixar.¹⁰⁷ This is another part of the formal pay structure.

97. Pixar, like other Defendant organizations, considered salary increase budgets each year in considering changes to its pay systems. Pixar was also interested in what was happening at other companies, particularly Lucasfilm. For example, Ms. McAdams sent an email to staff from Lucasfilm, among others: “Quick question from me, for those of you who can share this

¹⁰³ Deposition of Ms. Stephanie Sheehy, Pixar, March 5, 2013, page 49.

¹⁰⁴ Deposition of Ms. Stephanie Sheehy, Pixar, March 5, 2013, page 50.

¹⁰⁵ Deposition of Ms. Stephanie Sheehy, Pixar, March 5, 2013, page 78.

¹⁰⁶ Deposition of Ms. Stephanie Sheehy, Pixar, March 5, 2013, page 88.

¹⁰⁷ Deposition of Ms. Stephanie Sheehy, Pixar, March 5, 2013, page 136.

info. What is your salary increase budget for FY '07? Ours is 4%, but we may manage it closer to 3% on average. Are you doing anything close, more, or less?"¹⁰⁸

VI. Issues of Internal Equity

98. The best-known text in compensation, by Milkovich, Newman and Gerhart (2014), *Compensation*, notes in the glossary under "equity theory," "A theory proposing that in any exchange relationship (such as employment) the equality of the outcome/input ratios between a person and a comparison other (a standard or relevant person/group) will determine fairness or equity. If the ratios diverge from each other, the person will experience reactions of unfairness and inequity".¹⁰⁹ Issues of equity are clearly important not only in setting up the original structure of a compensation system but also when managing it.

99. There is substantial evidence that issues of internal equity and pay fairness were important to Defendant firms.

100. **Adobe:** There is evidence that Adobe followed principles of internal equity. For example, one document contains a section on the issue of a "Counter Offer". It states "Used when an employee is offered a job at another company but Adobe does not want to lose this individual". Below that is a list of bullet points including "We do counter but not to be publicized outside of HR" and "To be handled on a case by case basis and internal equity should ALWAYS be considered".¹¹⁰ The capitalized "ALWAYS" is in the original. This suggests both that internal equity was a concern at Adobe and that Adobe did not want to publicize outside of HR that counteroffers happened.

¹⁰⁸ Email from Lori McAdams, Pixar, November 17, 2006, LUCAS00184664, exhibit 122.

¹⁰⁹ Milkovich, Newman and Gerhart (2014), page 680.

¹¹⁰ Powerpoint, Retention/Transition Guidelines, Adobe, June 2008, ADOBE_050724, exhibit 216.5.

101. An additional mention of internal equity at Adobe is in the deposition of Mr. Digby Horner, Adobe's Senior Vice President of Engineering. In reference to an email exchange he had with colleagues that discussed the possibility of raising the pay of an employee "off cycle," a list of employees in similar positions at Adobe was included in the message.¹¹¹ Mr. Horner was asked, "Is it fair to say that you want to consider how [REDACTED] peers are being compensated to make sure that the compensation he receives is fair in comparison to them?" He replied, "Yeah. What I would – what I would say here is that, you know, the primary thing I look at is – so that – that's a term that we use internally, which is internal equity."¹¹²

102. Similarly, in 2008, Senior Vice President of Global Human Resources Donna Morris sent a message with the subject "final review of salaries," indicating, "I have just finished the full review of all salary and stock, and would like to recommend some changes relative to your organization. In some cases, the changes are positive as it relates to providing additional stock and as you will see below, some are adjustments that reduce salary (to align with internal equity)."¹¹³

103. Ms. Morris also references internal equity in a series of emails to Adobe's CEO Shantanu Narayen. In the first, Ms. Morris wrote concerning a job candidate, " [REDACTED] is a strong negotiator and would expect to be keeping his base salary which he puts at \$400K – however, I am recommending that he come in slightly below in base (because of internal equity relative to [REDACTED]) and because with AIP his overall total cash will be a richer target package than at [REDACTED]"¹¹⁴

¹¹¹ Email from Ms. Jocelyn Vosburgh, Adobe, October 25, 2010, ADOBE_011976-7, exhibit 1250.1-2.

¹¹² Deposition of Mr. Digby Horner, Adobe, March 1, 2013, page 200.

¹¹³ Email of Ms. Donna Morris, Adobe, January 18, 2008, ADOBE_009425, exhibit, 2501.1.

¹¹⁴ Email from Ms. Donna Morris, Adobe, March 4, 2007, ADOBE_005661, exhibit 1158.

104. In a different email, Ms. Morris wrote Mr. Narayen, “Shantanu – Please find attached proposed promotional compensation packages for [REDACTED] and [REDACTED] taking into account market and internal equity”¹¹⁵

105. In another exchange between Ms. Morris and Adobe’s CEO Mr. Narayen, she wrote about the compensation for a potential new hire and then listed names and initials of four people and some details of their compensation, including base and total cash compensation, under the caption “internal equity.”¹¹⁶

106. At his deposition, Mr. Narayen was asked about this third email exchange and what he meant when he emailed Donna Morris, “Does that cause any internal inequities?”¹¹⁷ He testified, “I think it would have related to, from a scope point of view and a performance point of view, are you looking at that?”¹¹⁸

107. Ms. Rosemary Arriada-Keiper also confirmed that internal equity was a principle used at Adobe. “We use internal equity primarily in the capacity of looking at, again, typically new hires ...”.¹¹⁹ She explained, “So myself, as an example, if I’m bringing in somebody from the outside and I’m thinking about what’s this offer that I want to make to this individual, I will generally look at my team and see where they’re positioned, you know, and kind of make a judgment call there. Because I do know that these individuals are going to be working side by side, and you know, it can potentially have implications for me as a manager if they’re performing exactly the same way and they feel like there is not a perceived fairness in terms of their pay, right?” She further stated, “A conversation to have to explain to the individual why I made the decision that I did, right? And there may be reasons for why I do that, and I’m

¹¹⁵ Email from Ms. Donna Morris, Adobe, June 5, 2010, ADOBE_019278, exhibit 1159.

¹¹⁶ Email of Ms. Donna Morris, Adobe, June 13, 2011, ADOBE_9652, exhibit 1160.

¹¹⁷ Email of Mr. Shantanu Narayen, Adobe, June 14, 2011, ADOBE_9652, exhibit 1160.

¹¹⁸ Deposition of Mr. Shantanu Narayen, Adobe, February 28, 2013, page 319.

¹¹⁹ Deposition of Ms. Rosemary Arriada-Keiper, Adobe, March 28, 2013, page 122.

perfectly comfortable with it. And in other instances, I may say you know what? It's not worth it to me. I don't want to create an issue where five people are going to be pissed off because this person, you know, makes more than them and haven't been here to prove themselves. So I have to rationalize that as a manager.”¹²⁰

108. **Apple**: There is evidence that Apple followed principles of internal equity. Mr. David Alvarez, Apple Recruiting Manager, testified that when making an offer to a new hire one of the factors to consider in compensation is internal equity. When asked, “What do you mean by ‘internal equity’”?¹²¹, Mr. Alvarez responded “What the population of – let’s say if a candidate’s coming in at a certain level, we look at someone in that organization at that level to see what everybody’s making. So who’s the low, the average and the high. That’s what internal equity is. There’s a lot of calibration to it, so there’s a lot of avenues that we take to come up with that recommendation”.¹²²

109. Former recruiter Darrin Baja testified that he was familiar with the term “internal equity” and that it was a term used in discussing compensation at Apple.¹²³

110. Mr. Baja was asked “So, for example, if you were hiring somebody onto a team, and they were doing a job function that was similar to what the other people on the team were doing, you would look to what the other people on the team were making for comparative purposes in setting the salary of the new hire?” He replied “That is one thing we would do, yes.”¹²⁴

111. In an email message in response to a suggested level of compensation for a candidate, Mr. Rob York wrote “I am not willing to go so high of a salary when compared to his

¹²⁰ Deposition of Ms. Rosemary Arriada-Keiper, Adobe, March 28, 2013, pages 124-5.

¹²¹ Deposition of Mr. David Alvarez, Apple, March 5, 2013, page 30.

¹²² Deposition of Mr. David Alvarez, Apple, March 5, 2013, page 30.

¹²³ Deposition of Mr. Darrin Baja, Apple, March 1, 2013, page 43.

¹²⁴ Deposition of Mr. Darrin Baja, Apple, March 1, 2013, page 44.

peer group. We can generate a fair offer within the average of the IC4s".¹²⁵ Mr. David Alvarez was asked about this message: "So in setting salaries that would be components of offers for candidates Apple was interested in hiring, was what a candidate's peer group was receiving an important consideration"? Mr. Alvarez responded "That's what we call internal equity".¹²⁶

112. Internal equity is also discussed by Director of Executive Recruiting Mr. Richard Bechtel, although he noted that he uses "the term 'internal parity' just to stay away from the term 'equity,' which can also mean RSUs and options. But internal parity is – yeah, yes, it does come up".¹²⁷ Mr. Bechtel was later asked "So would it create a problem from the standpoint of internal parity to offer a new hire more in compensation than is being paid to that new hire's peers who have the same job function?"¹²⁸ Mr. Bechtel responded "Yeah. It's – it's something that – it's something that we would definitely want to be aware of. We would want to be sensitive to it and we'd want to know why we were paying somebody more coming in than somebody who is, you know, their peer that's performing at a good level. And there have been circumstances that we've done that, but there's been business reasons for it". He was then asked "Well, why would you want to be sensitive about that?" Mr. Bechtel responded "I – we – it – because people that are good employees at Apple, that are doing good work, that are well-respected, and that are performing at a high level, you know, we – we want to – we want to make sure we're doing right by them".¹²⁹

113. There is other information at Apple that indicated that internal comparisons and equity mattered. Former recruiter Patrick Burke, was asked "So during your time, you hired or recruited engineers, correct?" He said "That's all I did. Yes". He was then asked, "Now, for

¹²⁵ Email from Mr. Rob York, Apple, on December 17, 2010, 231APPLE039427, exhibit 1376.2.

¹²⁶ Deposition of Mr. David Alvarez, Apple, March 5, 2013, page 208.

¹²⁷ Deposition of Mr. Richard Bechtel, Apple, March 7, 2013, page 40.

¹²⁸ Deposition of Mr. Richard Bechtel, Apple, March 7, 2013, pages 43-4.

¹²⁹ Deposition of Mr. Richard Bechtel, Apple, March 7, 2013, page 44.

any particular engineering candidate, how was the salary range established for that potential candidate?” Mr. Burke replied “It wasn’t a salary range determined, it was what salary we were going to offer”.¹³⁰ He then went on to say “And how that was determined was mostly asking the hiring manager who they compared to in the team, looking at the candidate’s education, experience, and knowledge within that experience, and comparing that to different people on their team. And these were the biggest deciphering things. Now, each person on their team that they compared to were at particular levels and titles and, you know, levels within the salary ranges. And that’s more what determined it. And then sometimes, depending on where – the number that we determined for a particular candidate, we would look where it falls in with a particular salary range, was that comfortable. There were certain guidelines that they didn’t want to be too high of one particular one, or too low, and that’s where kind of sometimes HR would get involved to do it. But it was generally guided by other people on the team and how they compared to them”.¹³¹

114. Mr. Burke confirmed that it was important not to pay new people more than those already working at Apple.¹³² “That was a determining factor, but it was, again, more about how they compared to those people. And so the hiring manager would usually not want to pay more than a person with similar or more experience at Apple. So we called it internal equity or fair compensation. And we would want to kind of keep it fair to the team on board. Just because this person was asking for more money than someone with similar experience on the team didn’t mean we just gave it to him. We would keep it fair to the people, and sometimes we would use a hiring bonus as a differentiator to close a deal”.¹³³

¹³⁰ Deposition of Mr. Patrick Burke, Apple, February 26, 2013, page 37.

¹³¹ Deposition of Mr. Patrick Burke, Apple, February 26, 2013, pages 37-8.

¹³² Deposition of Mr. Patrick Burke, Apple, February 26, 2013, pages 42-3.

¹³³ Deposition of Mr. Patrick Burke, Apple, February 26, 2013, page 43.

115. Apple's Senior Director of Compensation Mr. Steve Burmeister was asked "Have you heard the term 'internal equity'?" He replied "I've – in a compensation speak language, we use the term 'internal equity'". He elaborated "Internal equity means, to me, that what you're looking at, if you're looking at compensation, that it's fair based on the individual's contribution relative to the other employees in your group, or across your organization, whatever your scope of management is". When asked "Is there an internal equity component to determining starting salaries at Apple?"¹³⁴ Mr. Burmeister replied "It – internal equity plays into a few, if not all, of these bullets for managers to consider when looking at a candidate to determine a new starting salary".¹³⁵

116. There are two other issues related to this issue in an Apple document. A document notes "With this in mind, managers should not promote an employee" and then there are two bullet points: the first is "for performing the same responsibilities more proficiently" and the second is "because of salary pressure (for example, when an employee's salary approaches the top of the salary range)". On the same page of that document, it is noted "If an employee accepts a promotion managers should" among other things "review the salaries of incumbents who are in positions of equivalent value and are in the same geographical location" and "[r]ecommend a promotional increase – considering increasing the base salary to the minimum of the new salary grade or where appropriate relative to other employees in similar positions."¹³⁶

117. **Google:** There is evidence that Google followed principles of internal equity. For example, a PowerPoint presentation about determining base salary shows three features

¹³⁴ Deposition of Mr. Steven Burmeister, Apple, March 15, 2013, page 63.

¹³⁵ Deposition of Mr. Steven Burmeister, Apple, March 15, 2013, pages 63-4.

¹³⁶ Powerpoint, Compensation Framework, Insuring Global Consistency, Apple, 231APPLE105345, exhibit 1856.4.

linked to “determining a base salary”: “competing offers,” “current base” and “internal equity and reference points”.¹³⁷

118. Another Google document is related to equity issues. Figure 7 is a reproduction of a Google document.¹³⁸ On the vertical axis is the employee performance rating. The document indicates that the ratings go from 2.9 to 5.0, and 3.5 is average. On the horizontal axis the “pre-adjustment position” is listed. This scale goes from “70%” up to “120%” and indicates the position the employee is in range.¹³⁹

119. The figure reflects guidelines that indicate for a given level of performance, the higher the pre-adjustment position, the lower the merit increase is to be expected. For example, consider someone with the very-highest performance rating (5.0). If that person has a pre-adjustment position of 70%, his or her suggested merit increase will be 23%, but if that person has a pre-adjustment position of 120%, his or her suggested merit increase will be only 2%. Also consider someone who is rated as an average performer (with a rating of 3.5). If that person is at a pre-adjustment position of 70%, his or her suggested merit increase will be 20%, but if that person has a pre-adjustment position of 110% or higher, his or her suggested merit increase will be 0%.¹⁴⁰ The system suggested by this figure essentially is consistent with bringing salaries in a group back together over time.

120. The preceding example is a structured situation that shows that issues of equity need not immediately lead to compensation changes. However, equity can have serious and large implications for compensation over short, but not immediate, periods of time.

¹³⁷ Powerpoint, Compensation Components Setting a Base Salary, GOOG-HIGH-TECH-00036302, exhibit, 1606.16.

¹³⁸ Powerpoint, Salary Planning 2007, Presentation to Engineering Directors, 29 October 2007, exhibit, 1609.10.

¹³⁹ Powerpoint, Salary Planning 2007, Presentation to Engineering Directors, 29 October 2007, exhibit, 1609.10.

¹⁴⁰ Powerpoint, Salary Planning 2007, Presentation to Engineering Directors, 29 October 2007, exhibit, 1609.10.

121. There is a reference to internal equity in an email from Compensation Team Member Ms. Tiffany Wu, indicating “To reiterate the goals of the salary (merit + promo) algorithms: 1. Ensure internal equity by managing salaries within a reasonable range (85% to 115% of reference point as ideal, 80% to 120% is acceptable) for a given job at a given job level.”¹⁴¹

122. In another Google document the FAQ section contains this question and answer: Q: “How are market reference points determined?” A: “Google’s Compensation team benchmarks our pay practices against both external market data and internal Google data. As a result of this process, market reference points for each job/role are determined. This ensures over pay is competitive in each market and equitable both across departments and within regions.”¹⁴²

123. There is also evidence of this from other Defendants but not in such a tabular form. Some of this is directly related to discussions of equity. There are other instances, for example at Apple. For example, Mr. Ron Okamoto wrote an email with respect to raises, “An important consideration is that folks at the top of their salary range won’t get raises. They would have to get promoted into a higher pay grade to continue getting pay raises”.¹⁴³

124. Mr. Okamoto was asked about this in his deposition. He said, “And so the question is, when that happens, what do you do? Sometimes you promote the people because in some cases because of their performance we’ve shown that they’re people who need to get promoted to the next level. And in some cases, it’s a little bit more difficult when that promotion

¹⁴¹ Email from Tiffany Wu, September 7, 2007, Goog-High-Tech-00473658, exhibit 1613.

¹⁴² Google document, GOOG-HIGH-TECH-00474908, exhibit 1618.12.

¹⁴³ Email from Mr. Ron Okamoto, Apple, September 17, 2010, 231APPLE099371, exhibit 1130.1.

takes them into a range, for example, or directly managing people and these may be individual contributor jobs".¹⁴⁴

125. **Intel:** There is evidence that Intel followed principles of internal equity. For example, in a PowerPoint document from 2002 titled, "NPG Human Resources Job Leveling & Pay Equity Review," Intel noted, "Problem statement: We believe there are continuing inequities in the alignment of base salaries/EB targets between hired and acquired Intel employees."¹⁴⁵ The same document states a few pages later: "Numerous examples of acquisition employees earning significantly more than their long-tenured Intel peers. Many acquired employees received 0% increases due to high pay"¹⁴⁶ and "Numerous examples of external candidates with base salaries that create internal equity issues with long-tenure Intel employees."¹⁴⁷

126. Another Intel PowerPoint from 2005 describes a "proposal" to do a "job audit" on certain job grades. It also notes that the "rationale" are that "the data doesn't jive" and "significant pay inequities within some grade/job code".¹⁴⁸

127. Likewise, the document titled "Manage Offer Module Develop External offer" has a section, "Step 14 Internal Equity." There it is noted "for experienced hires, the candidate profile, pay guidelines, and internal equity are main pieces of information used to compute the base salary. Internal equity is defined as a fairness criterion comparing comparable Intel jobs using education, experience, skill level and performance and timing of next review period. Internal equity is used to determine wage rates for new hires and current employees that

¹⁴⁴ Deposition of Mr. Ron Okamoto, Apple, February 27, 2013, page 135.

¹⁴⁵ Powerpoint, NPG Human Resources Job Leveling & Pay Equity Review, June 6, 2002, 76583DOC00388, exhibit 392.3.

¹⁴⁶ Powerpoint, NPG Human Resources Job Leveling & Pay Equity Review, June 6, 2002, 76583DOC00388, exhibit 392.5.

¹⁴⁷ Powerpoint, NPG Human Resources Job Leveling & Pay Equity Review, June 6, 2002, 76583DOC00388, exhibit 392.5.

¹⁴⁸ Powerpoint, TMG Non-Tech Job Audit – HR, Intel, August 25, 2005, 76583DOC008097_000003, exhibit 397.3.

correspond to each job's relative value to Intel." The document also instructs, "Comparables should include the current compensation of 3-5 employees in the same grade and job family within the hiring department or division" and "Where would the manager rank this person within their department based on their expectation of the applicant's contribution and job performance?"¹⁴⁹

128. A document referencing internal equity is a spreadsheet stating "Pull internal equity report (Internal Equity Report link on OD&D tool)".¹⁵⁰ Another document notes a number of suggested actions that would seem to be directly consistent with equity. For example, there are suggestions for an "average performer" who is "among the highest paid for their comparison group (e.g., 90th percentile of external market or Intel peer)" that the "suggested action" is to "freeze pay". And for an "average Performer" who is "highly paid (e.g., above the 75th percentile) that the "suggested action is to "reduce merit increase by 50%". So this suggests merit pay be reduced based on information about a person's position in salary range in the job. This also suggests that relatively higher paid individuals (among a set of peers at Intel) would have relatively smaller raises. This continues similarly for other situations. For example, in the situation where a "repeat high performer is paid less than the 25th percentile" the suggested action is to "use the surplus budget from actions above to improve pay position."¹⁵¹

129. A PowerPoint discussing "Base Pay Comparison," notes that when "the Intel peer data and External Market data are not aligned or no data is displayed," the "suggested action" is

¹⁴⁹ Document, HR Global Staffing, Manage Offer Module, Develop External Offer, document Version 1.3, February 13, 2009, 76579DOC005963, exhibit 398.8.

¹⁵⁰ Intel spreadsheet 76579DOC005152_000017.

¹⁵¹ PowerPoint, Base Pay Comparison Report Support Overview WW 042011, 765825DOC001211, exhibit 400.17.

to “Follow Focal tool recommendation or use internal equity to current peer as the main driver for your pay decision.”¹⁵²

130. An Intel document from 2008 questioned, “Are there specific areas where we are experiencing market/internal equity issues?”¹⁵³

131. Similarly, in a document called “Worldwide Focal 2001 Questions and Answers. Intel Confidential,” the following question and answer appear:

132. Q21. “My organization has hired a lot of people in the last year and many are being paid more than existing employees. We were told this Focal budget would allow managers to address the equity issues caused by this pay compression. Now what?”

133. A21. “Managers have had the opportunity to address pay compression and internal equity concerns through the Focal planning process. One half of the increases will be delivered in April and the other half in October, subject to management approval. The combination of these increases should address equity issues”.¹⁵⁴

134. In reference to the “Q21” and “A21” document mentioned above¹⁵⁵, Worldwide Focal 2001 Questions and Answers, Intel Confidential, Deborah Conrad was asked, “How did the hiring of outside people implicate equity issues?” She replied “The only way I interpret this is that they brought in people at a higher pay – you know, at a higher compensation rate than people in the existing organization, and they were going to try and make adjustments at focal. I don’t – that’s how I read this.”¹⁵⁶

¹⁵² PowerPoint, Base Pay Comparison Report Support Overview WW 042011, 765825DOC001211, exhibit 400.17.

¹⁵³ Powerpoint, Internal Climate, Intel, 76596DOC017025, exhibit 781.16.

¹⁵⁴ Worldwide Focal 2001 Questions and Answers Intel Confidential, Rev 13, Feb 26, 2001. 76583DOC003753, exhibit 391.4.

¹⁵⁵ Worldwide Focal 2001 Questions and Answers Intel Confidential, Rev 13, Feb 26, 2001. 76583DOC003753, exhibit 391.4.

¹⁵⁶ Deposition of Ms. Deborah Conrad, Intel, November 21, 2012, page 202.

135. Ms. Conrad testified that equity issues were addressed during Intel's' annual salary process ("focal").¹⁵⁷ "Yes, that could be – that could be one of the things that you would look at."¹⁵⁸

136. Ms. Conrad also testified about her understanding of the term internal equity. "I understand the term to mean people doing a relatively similar – complexity similar of their job are being compensated in a similar way. So we talked about the grade level example".

Ms. Conrad continued, "A grade-level engineer and – a grade level 12 engineer, a grade level 12 project manager, a grade level 12 software person are being compensated based on complexity of that role, and there's a range that – of the compensation that is allocated to that grade, and that gives us equity across – internally across job function."¹⁵⁹

137. CEO Paul Otellini noted in an email, "At Intel all our employees are reviewed relative to their performance and their compensation versus market. ONLY those with Below Expectations performance or above market compensation are exempt for raises."¹⁶⁰ The fact that those with relatively high levels of pay as compared to their peers are exempt from raises is consistent with internal equity.

138. Ms. Renee James, Manager of Intel's Software Services Group, testified that she understood internal equity to mean: "A set of criteria that we use to in aggregate check between different people in the same grade band across a variety of metrics, performance, pay, equity".¹⁶¹ She also noted, "I think internal equity is aspirational. I think it is a guideline that helps you look at, you know, apples and oranges data and give you a sense of what's going on, but we focus on pay and performance. So the number one criteria is performance and performance to grade,

¹⁵⁷ Deposition of Ms. Deborah Conrad, Intel, November 21, 2012, page 204.

¹⁵⁸ Deposition of Ms. Deborah Conrad, Intel, November 21, 2012, page 204-5.

¹⁵⁹ Deposition of Ms. Deborah Conrad, Intel, November 21, 2012, page 50.

¹⁶⁰ Email from Mr. Paul Otellini, Intel, January 22, 2010, 76616DOC012164, exhibit 478.1.

¹⁶¹ Deposition of Ms. Renee James, Intel, March 22, 2013, pages 242-3.

performance versus peers, performance versus market. ... So I would call internal equity a secondary or tertiary tool".¹⁶² As I note elsewhere and I think is implied here, concepts of equity and pay and performance are not independent. They can also be used simultaneously.

139. Intel Vice President of Human Resources Ms. Patricia Murray also testified about her understanding of the term "internal equity." "My general understanding of internal equity, it is a process by which a manager or group of managers or even a department judges whether people are being paid fairly next to one another inside the company."¹⁶³

140. Intel Compensation and Benefits Specialist Daniel McKell explained his understanding of the use of the term "internal equity" at Intel: "internal equity means fairness. Typically, when we talk about internal equity, it's how employees are paid relative to each other. It can also be part of that – "egalitarian" is another term that we would say – so from an internal equity perspective, everybody participates in stock even though they have different grades. So it has multiple meanings depending on the specific context, but generally is mean fairness".¹⁶⁴

141. Mr. McKell testified about HR's "internal equity report" explaining, "It's a query within our HR system of record where staffing could identify pay for employees in – depending on what criteria they put in the query, you could get to, you know grade 5 manufacturing engineer in Santa Clara, to see that we pay those employees."¹⁶⁵

142. In a 2005 email, Mr. McKell wrote: "Worked with CTM to push out the date of recommunicating salary reduction percentages associated with the move to OR. Since internal equity is the primary concern and most moves will happen in Q2/Q3 of each year, we decide to

¹⁶² Deposition of Ms. Renee James, Intel, March 22, 2013, page 244.

¹⁶³ Deposition of Ms. Patricia Murray, Intel, February 14, 2013, page 40.

¹⁶⁴ Deposition of Mr. Daniel McKell, Intel, March 20, 2013, page 207.

¹⁶⁵ Deposition of Mr. Daniel McKell, Intel, March 20, 2013, page 210.

push the calculations until we have post-focal data for comparisons ..."¹⁶⁶ Mr. McKell explained that internal equity was a concern because: "They were worried about – for the employees that would join from – who would move from Santa Clara to Oregon, if they were to – we had to set their pay close enough to the pay of people in Oregon that it wouldn't cause a lot of trash around "why is so-and-so just from Santa Clara making 10 to 15 or just 10 percent more than me"?¹⁶⁷

143. In reference to the same e-mail, Mr. McKell testified that he had written that internal equity "looks pretty good" because "...the people that they had brought in were generally being paid about the same as existing Intel employees."¹⁶⁸

144. Mr. McKell also testified about Intel's merit budgets. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]¹⁶⁹ Note that it is my understanding in this context that Q is referring to quartile in range with Q1 being the smallest quartile and Q4 being the largest (elsewhere in documentation from the Defendants Q sometimes refers to quarter of the year). So this suggests that for a given level of performance (e.g. "successful"), those higher in the pay range in advance of the performance rating have a lower suggested raise.

145. Mr. McKell explained, "... so there's a series of goodies that a manager can allocate, and peanut butter means trying to spread it out as far as it can go".¹⁷⁰ He was then asked, "Did it ever come to your attention that managers at Intel had a tendency to engage in peanut butter behavior"? He replied, "We – in analyzing the data, you could see when managers

¹⁶⁶ Email from Danny McKell, Intel, February 2005, 76657DOC004599, exhibit 2033.

¹⁶⁷ Deposition of Mr. Daniel McKell, Intel, March 20, 2013, page 227.

¹⁶⁸ Deposition of Mr. Daniel McKell, Intel, March 20, 2013, page 228.

¹⁶⁹ Deposition of Mr. Daniel McKell, Intel, March 20, 2013, page 100.

¹⁷⁰ Deposition of Mr. Daniel McKell, Intel, March 20, 2013, page 188.

would not give the full increase to employees rated outstanding, and instead, give a bit more to the employee rated successful – to the 70 percent of employees rated successful”¹⁷¹

Mr. McKell was asked, “Is the impact of peanut butter behavior to decrease pay differentials between employees.” He replied, “Yeah. The more you peanut butter, the less differentiation you have.”¹⁷²

146. In my view it is certainly easily possible for organizations to have both a pay for performance system in place, while simultaneously stressing equity and related concepts. In fact, Intel’s Daniel McKell testified that the philosophies of both internal equity and meritocracy exist at Intel. “They do exist. I don’t believe that they’re mutually exclusive. I think meritocracy definitely exists in pay raises and bonus changes and stock grants, and that it is effective. I also think internal equity exists, because managers look at pay fairness relative to what each employee is making, and makes [sic] decisions based on that – whether somebody is too high or too low relative to their peers. So I think there are good checks and balances on each other.”¹⁷³

147. Intuit: There is evidence that Intuit followed principles of internal equity. For example, Director of Talent Acquisition Chris Galy testified about Intuit’s practice of benchmarking and considering external and internal employees when setting new hire pay: “So our goal is to get as many data points as possible, but in most cases and in speaking from the way I go into a hiring plan with a leader is I have – I utilize some of the tools that our total rewards team gives us around total rewards. So the industry benchmarks through companies like Radford, AON and – just to give you some sense of what the market is doing in those specific geographies for that type of talent. Again, it’s a data point. Other data points that managers usually are naturally reflective of is where other folks doing similar work in their own teams are.

¹⁷¹ Deposition of Mr. Daniel McKell, Intel, March 20, 2013, page 189.

¹⁷² Deposition of Mr. Daniel McKell, Intel, March 20, 2013, page 190.

¹⁷³ Deposition, Mr. Daniel McKell, Intel, March 20, 2013, pages 269-70.

And if we would have had a similar role in the recent past, we might have some data points that are relevant for recent hires or candidates that we want to offer to.”¹⁷⁴

148. Another example that the pay of one person mattered relative to that of another is included in this testimony from Mr. Galy: Q. “Can you give me a personal example or example about which you have some personal knowledge of an off-cycle pay action?”¹⁷⁵ A. “Where a manager would come in and say, “I believe that I have a high performing” – in fact, I just had one of these about a month ago, couple of months ago, where we went out and hired somebody, and as we were looking at some folks on the team, we recognized that the person is – we were at risk of potentially having this person feel like they were, you know, not in the market range, and so we did an action for her.” Q. “I see. And so you said the pay action was with respect to the existing employee? The person had been there already?” A. “Right. We gave her a salary increase.” Q. “Okay. Because somebody else had been hired to do similar work at a higher rate?” A. “Well, because we – yeah, and that gave us some data, data to show that, hey, you know what, this person’s a high performer. Let’s take a look at her and see if there isn’t something we could do for her.”¹⁷⁶ Q. “Is it possible that this is one of the situations in which a manager might – or the business leader might have to go to his manager and ask for a bigger compensation budget?” A. “Yeah.”¹⁷⁷ This very last part indicates that budgets are not always fixed for increases. In fact, sometimes additional resources are gathered and pay is even increased off-cycle.

¹⁷⁴ Deposition of Mr. Chris Galy, Intuit, March 20, 2013, page 180-1.

¹⁷⁵ Deposition of Mr. Chris Galy, Intuit, March 20, 2013, page 194-5.

¹⁷⁶ Deposition of Mr. Chris Galy, Intuit, March 20, 2013, page 195.

¹⁷⁷ Deposition of Mr. Chris Galy, Intuit, March 20, 2013, page 195-6.

149. An email Mr. Galy forwarded also mentions internal equity. That email stated: “Hiring managers for the most part are reviewing their teams [sic] internal equity and we are adjusting our offers to reflect this.”¹⁷⁸

150. An Intuit document titled “Talent Acquisition Hiring Plan” also noted internal equity. In one section, this hiring plan noted “salary, bonus target, review stock option expectations with manager (good time to review internal equity, market pay, etc.).”¹⁷⁹

151. There is also mention of “internal equity” in another Intuit document from 2005 that mentions “internal equity/relativity” and notes, “How does the individual’s pay stack up given the effectiveness, skill level, experience and pay of other employees (particularly of those performing similar roles)?”¹⁸⁰

152. An additional Intuit document mentions equity. On a page titled “6 Steps in Making an Effective Pay Decision” it is noted in step 1 “Gather information …” including “internal relativities” and in step 2 “Assess value … supply and demand” including “rank employees by performance, retention and pay equity.”¹⁸¹

153. **Lucasfilm:** There is evidence that Lucasfilm followed principles of internal equity. For example, Lucasfilm Senior Manager, Compensation Michelle Maupin was asked “Do you think fairness was considered at all prior to 2006 in setting employee salaries?” She replied “What do you mean by ‘fairness’”? She was then asked “Was internal equity considered at all prior to 2006 in setting employees’ salaries?” “Based on my knowledge and information that I have seen, documents I’ve looked at in the past, yes”.¹⁸²

¹⁷⁸ Email from Mr. Chris Galy, Intuit, March 3, 2010, INTUIT_039793, exhibit 2142.1.

¹⁷⁹ Document from Intuit, Talent Acquisition Hiring Plan, INTUIT_007866, exhibit 1107.2.

¹⁸⁰ Powerpoint, INTUIT Total Rewards & Pay Decisions Toolkit, Intuit, May 2005, INTUIT_043560, exhibit 2739.31.

¹⁸¹ Powerpoint, Focal Decisions 2005, Communications Session for Senior Managers, June 2005, Intuit, INTUIT_052841, exhibit 2740.16.

¹⁸² Deposition of Ms. Michelle Maupin, February 12, 2013, page 85.

154. Ms. Maupin also testified, “I would anticipate that if a junior level or a junior-skilled employee was at the same or same pay level as a senior employee, that might cause dissatisfaction for even the manager of those employees.”¹⁸³

155. Ms. Maupin was asked, “Can you explain the significance of peer relationships in setting compensation at Lucasfilm?” She replied, “The significance is to consider individual employees’ pay within a similar job and pay range using the same type of skill sets to appropriately align those employees relative to their peers and to market.”¹⁸⁴

156. In her declaration, Ms. Maupin also noted equity: “Lucasfilm occasionally adjusts salaries outside of the April pay-for-performance process. These are referred to as out-of-cycle increases and are given for promotions, and equity adjustments. An equity adjustment is intended to bring an employee’s compensation more in line with (but not necessarily equal to) internal peers or the targeted percentile or external peer compensation.”¹⁸⁵

157. Ms. Michelle Maupin stated by email: “... [REDACTED] has already told him I don’t agree with the [REDACTED] and I don’t want you to feel pushed into approving [REDACTED]. In looking at the comp sheet, she would be at the top other than [REDACTED] (who doesn’t get OT) and [REDACTED] who has been here 20 years. She is the ‘newest’ employee in the [REDACTED] group. We are proposing [REDACTED] which would put her mid pack. Unless we want to raise salaries of the other [REDACTED] [sic], I think this is fair.”¹⁸⁶

158. In questioning related to an email from Ms. Maupin to Chief Administrative Officer Jan van der Voort where Ms. Maupin wrote, “Internal equity is a concern, although we

¹⁸³ Deposition of Ms. Michelle Maupin, February 12, 2013, page 175.

¹⁸⁴ Deposition of Ms. Michelle Maupin, February 12, 2013, page 178.

¹⁸⁵ Declaration of Ms. Michelle Maupin, January 17, 2013, page 9.

¹⁸⁶ Email from Ms. Michelle Maupin, November 4, 2010, LUCAS00198130, exhibit 729.1.

just hired ..."¹⁸⁷ Ms. Maupin was asked, "Was the internal equity concern that [REDACTED] might be paid more than her colleagues?" She answered, "In some cases."¹⁸⁸

159. In another situation at Lucasfilm, Ms. Jan van der Voort wrote a message noting, "Steve, I think this needs Jim Ward's buy-in ... at this level, we're getting in to some interesting internal equity issues, which I want Jim to be aware of before I decide."¹⁸⁹

160. Ms. van der Voort testified about her familiarity with internal equity at Lucasfilm. "It means generally that you are aware of where similarly situated employees are from a compensation perspective, either within their division or across the company depending on what you are looking at." Then she was asked, "Is internal equity a consideration in setting salary grades?" She replied, "It is a consideration, yes."¹⁹⁰

161. Senior Director of Human Resources Sharon Coker discussed internal equity in her deposition. "Internal equity is that people within the company, internally within the company – and it has nothing to do with what the market pays, if you want to be literal with it. But internal equity then means that at my company I'm paid comparably – not exactly, but I'm paid comparably to other people with the same set of experience and same level of performance for doing, the same work."¹⁹¹

162. Ms. Coker was asked, "Did you understand the idea of – concept of Lucas – excuse me, the idea of internal equity to be something that all sorts of companies thought about when constructing or modifying their compensation structures"?¹⁹² She answered, "Absolutely.

¹⁸⁷Email from Ms. Michelle Maupin to Jan van der Voort, May 8, 2008, LUCAS00201069, exhibit 727.3.

¹⁸⁸ Deposition of Ms. Michelle Maupin, February 12, 2013, page 182.

¹⁸⁹ Email from Ms. Jan van der Voort, July 9, 2007, LUCAS00060705, exhibit 728.1.

¹⁹⁰ Deposition of Ms. Jan van der Voort, February 5, 2013, page 200.

¹⁹¹ Deposition of Ms. Sharon Coker, LucasFilm, November 1, 2012, page 259.

¹⁹² Deposition of Ms. Sharon Coker, LucasFilm, November 1, 2012, page 259-60.

And if the company didn't, the employees would remind them. So, you know, again, I think it's – it is – internal equity is a consideration in compensation decisions."¹⁹³

163. Ms. Coker also noted in her deposition, "... I would say that almost always when you made – not always, but often if you would make an individual decision, it could impact other employees in similar positions. So you had to look at that."¹⁹⁴

164. Ms. Coker testified about internal equity: "...internal equity would be – it could mean two things. One is it could mean that there were a group of employees in a job family doing similar work and at one company, perhaps even they were paying X or a range of X to Y for those positions. Across the street, more or less in one of the other divisions, they might be paying from X to Z for those positions. So it was within Lucas companies are there any – can we identify any areas where we have, you know, what I would call a 'pay discrepancy,' where we're not paying within reason within ranges."¹⁹⁵

165. There are multiple references to "call out for equity" in an email from Ms. Vanessa Hall at Lucasfilm.¹⁹⁶

166. Internal equity is also noted in an additional Lucasfilm document from 2004: "Evaluate Internal Candidates' qualifications against market value and internal equity."¹⁹⁷

167. Likewise, a Lucas film document from 2006 mentions "Gathering input on comp issues" including "internal equity".¹⁹⁸

168. **Pixar:** There is also evidence that Pixar followed principles of internal equity. In her deposition, Pixar Vice President of Human Resources Lori McAdams was asked, "Now, how

¹⁹³ Deposition of Ms. Sharon Coker, LucasFilm, November 1, 2012, page 260.

¹⁹⁴ Deposition of Ms. Sharon Coker, LucasFilm, November 1, 2012, page 245.

¹⁹⁵ Deposition of Ms. Sharon Coker, LucasFilm, November 1, 2012, page 283.

¹⁹⁶ Email from Ms. Vanessa Hall, February 14, 2011, LUCAS00199905-6.

¹⁹⁷ Compensation Analysis and Review Process, Internal Transfer, DRAFT Last Updated 11-23-04, LUCAS00185312, exhibit 716.

¹⁹⁸ Powerpoint, Lucasfilm Ltd. Compensation Project Status Executive Review, Lucasfilm, December 7, 2006, LUCAS00027982, exhibit 359.4.

is the compensation of a new employee – how is the base salary of a new salaried employee determined?” She answered, “We look at their experience and education and how we evaluate them against existing employees – and make them an offer relative to their experience and – and our existing talent”.¹⁹⁹ Note the reference to existing talent.

169. While not directly using the term “equity,” the deposition of Stephanie Sheehy describes related issues. She notes, “The goal of this new salary proposal is to compensate the lowest paid team-members who are performing at the highest levels. This is a ‘pre-emptive strike’. We want to send a clear message to these engineers that we value them at least as much as some new hires who are seeing much more competitive offers from other companies.”²⁰⁰

VII. Internal Equity and Pay for Performance Are Not Mutually Exclusive

170. In this section I discuss the issues of pay for performance and internal equity. Both pay and performance and internal equity are often-discussed in the realm of compensation. I discuss here that it is possible to have a compensation system that is simultaneously consistent with pay for performance and also with internal equity.

171. The Google Figure 7 is quite interesting since it is an example in one space where one can see a system that reflects both “pay for performance” and equity concerns at the same time. This means that (a) (reading down), given a certain position in range, the higher one’s performance rating the higher his or her suggested raise. But it also means that (b) (reading across), given a level of performance rating, the higher one is in the range, the lower will be his or her suggested raise. Clearly (a) is consistent with pay for performance. But (b) is also consistent with equity and moving compensation levels together.

¹⁹⁹ Deposition of Ms. Lori McAdams, August 2, 2012, page 32.

²⁰⁰ Deposition of Ms. Stephanie Sheehy, Pixar, March 5, 2013, page 151.

172. Adobe also has information that is very similar to the Google Figure 7. In Figure 8, I have included the left 1/3 (the part that is relevant for the United States) of an Adobe table on “salary increase matrices”.²⁰¹ The table has two parts. The top is for managers. The bottom is for “individual contributors”²⁰² (IC). It is clear from Figure 8 for Adobe that, again, for a given performance rank, the higher the position in range, the lower the suggested salary increase.

173. I found what appears to be similar information at Apple. In an Apple document²⁰³ there appears to be evidence that for a given level of performance those higher in the “salary range position”²⁰⁴ (SRP in Figure 9) have a lower planned increase. This is true for each level of performance: “exceptional,” “significant,” and “solid”.

174. From a different Adobe PowerPoint slide, I have used information to create Figure 10 which is a matrix the vertical axis of which (rows) appears that it could be performance rating with “HI” as highest, “SC” the middle ranking and “LP” the lowest ranking.²⁰⁵ In fact, Ms. Arriada-Keiper is asked at one point about three levels of performance: “What were the three levels of performance when there were three?” and she replied “HI, solid and low”.²⁰⁶ The shorthand for all three appears to match three of the four in Figure 8. In Figure 10, the horizontal axis (the columns) appear to be position in salary range from “Below-Midpoint” to “Above Mid-point” to “Above Max”. The nine numbers in the boxes appear to be suggested salary increases. Notice that the numbers get smaller (or stay the same) as you go

²⁰¹ Powerpoint, 2010 Annual Performance Review, Compensation Training for Managers, December 2009, ADOBE_100614, exhibit 2487.15.

²⁰² Deposition of Ms. Rosemary Arriada-Keiper, Adobe, March 28, 2013, page 165.

²⁰³ Powerpoint, Total Rewards Planning, FY07, September 2006, Apple, 231APPLE095052, exhibit 1855.107.

²⁰⁴ Deposition of Mr. Steven Burmeister, Apple, March 15, 2013, page 122.

²⁰⁵ Powerpoint, Global Market Analysis, Adobe, exhibit 2486.33.

²⁰⁶ Deposition of Ms. Rosemary Arriada-Keiper, Adobe, March 28, 2013, page 96.

down or to the right in the Figure. This expresses the same concept as in previous examples for Google (Figure 7), Adobe (Figure 8) and Apple (Figure 9).²⁰⁷

175. Intel also has a document that appears to be consistent with these ideas but is not in a tabular format.²⁰⁸ In this document there are various “scenarios” and then “actions” that I have reproduced in Figure 11. In one “situation” an “average performer is among the highest paid for their comparator group (e.g., 90th percentile of external market or Intel peers)”. For this the “action” is “Freeze pay, coach ee re: steps to move to next grade as appropriate”. In the second “situation” there is “Average Performer is highly paid (e.g. above the 75th percentile)” and the “action” is “Reduce merit increase by 50%”. In a third “situation” the “action” is “Use surplus budget from actions above to improve pay position”.²⁰⁹ Each of these scenario and action pairs is consistent with the examples in Google (Figure 7), Adobe (Figure 8) and Apple (Figure 9).

176. So there is direct evidence of compatibility between principles of internal equity and pay-for-performance that I found from four of the Defendant companies (Google in Figure 7, Adobe in Figure 8 (and perhaps Figure 10 if I have interpreted those data correctly), Apple in Figure 9 and Intel in Figure 11. These examples make explicit that the companies direct relatively lower raises to those who are relatively more highly paid in a given grade for a given performance level.

177. There is also evidence of this from other Defendants but not in such an explicit tabular form. Some of this is directly related to discussions of equity. There are other instances, for example at Apple. There, Mr. Ron Okamoto wrote an email with respect to raises, “An

²⁰⁷ Powerpoint, Global Market Analysis, Adobe, exhibit 2486.33.

²⁰⁸ Powerpoint, Base Pay Comparison report Support Overview WW 042011, 765825DOC001211, exhibit 400.17.

²⁰⁹ Powerpoint, Base Pay Comparison report Support Overview WW 042011, 765825DOC001211, exhibit 400.17.

important consideration is that folks at the top of their salary range wouldn't get merit raises.

They would have to get promoted into a higher pay grade to continue getting pay raises".²¹⁰

178. Mr. Okamoto was asked about this in his deposition. He said "And so the question is, when that happens, what do you do? Sometimes you promote the people because in some cases because of their performance we've shown that they're people who need to get promoted to the next level. And in some cases, it's a little bit more difficult when that promotion takes them into a range, for example, of directly managing people and these may be individual contributor jobs".²¹¹

179. It can be shown that pay and performance and issues of equity are not mutually exclusive in other ways. Consider two employees in a work group who are both paid a base salary and a "commission" or piece-rate for some level of output (say sales of some item such as a book or car). Arranging the system so that appropriately grouped workers have similar base salary and commission rate is certainly equitable. At the same time, this compensation system has a pay for performance component.

VIII. How Restricting Cold Calling Can Restrict Information and Pay

180. Restricting cold calling can clearly restrict information and pay. In many markets, employees are hired due to cold calls.²¹²

181. Note the views of the court in this case. "As the documentary evidence above demonstrates, there is compelling evidence that in the absence of the anti-solicitation agreements, Defendants would have had to make structural preemptive or reactive changes".²¹³

²¹⁰ Email from Mr. Ron Okamoto, Apple, September 17, 2010, 231APPLE099371, exhibit 1130.1.

²¹¹ Deposition of Mr. Ron Okamoto, Apple, February 27, 2013, page 135.

²¹² There is a difference between an organization's product market competitors and its labor market competitors. Some organizations may not compete in the market for goods and services. Nevertheless, they may hire from among the same pool of workers.

²¹³ Order by Judge Lucy H. Koh, Case5:11-cv-02509-LHK Document531 Filed10/24/13, page 74.

“The question presented by this case is not whether Defendants’ anti-solicitation agreements had an impact on any employees. Defendants concede that some employees may have been impacted. *See* Tr. at 144:11-12 (‘And I admit at the start, we are not saying that nobody was impacted.’).”²¹⁴

182. In the instance of this case, the Defendant firms limited the market for the employees by restricting cold calling. This clearly led to what would otherwise be higher levels of compensation for some of those in the firms, except that the restrictions were in place.

183. This situation of lower levels of compensation for some can directly lead to lower levels of others due to the very nature of the formalized pay systems in place at the Defendants. This is even more likely among the Class members here, who worked for a Defendant while that Defendant participated in at least one “no cold-call” agreement with another Defendant.

184. The formalized systems in place at the Defendants relied on structures, external data from the market and the like, and notions of equity were present at Defendants. As a result, those effects cycle on to other employees and their levels of compensation. Therefore, the formal compensation structures provided propagation mechanisms to translate effects broadly.

185. In a very strict simple supply and demand model, with perfect competition and immediate complete information, prices of all sorts can adjust immediately. But many markets don’t hold all of these characteristics or behave this way. Some economists discuss the idea that workers are paid their value at any given time. But we know of many instances where pay changes at discreet moments and surely this is not always coincident with discreet changes in productivity.

186. An example of this is when someone gets a raise at a point in time or when he or she changes jobs for a higher level of compensation or when, in response to new information,

²¹⁴ Order by Judge Lucy H. Koh, Case 5:11-cv-02509-LHK Document 382 Filed 04/05/13, page 13.

compensation levels change. Take for example the email from Mr. Arnon Geshuri from Google where he notes “We should look internally and review the attrition rate for the SRE group. We may want to consider additional retention incentives or team incentives to keep attrition as low as possible in SRE”.²¹⁵ Included among options for the company were “go on the offensive,” which includes “start an aggressive campaign to call in to their company and go after folks – no holds barred. We would be unrelenting and a force of nature”.²¹⁶ Surely, calling in to employees they previously were not contacting could have positive effects on the compensation of those to whom they would call, either at their current employer, elsewhere or at Google.

187. An additional example of a rapid change in compensation due to new information comes from Intuit. Mr. Alex Lintner was asked “Are you aware of any instances in which Intuit has identified employees who should be the focus of retention efforts?” He replied “Oh, yes. Lots of them. We go through that all the time. [REDACTED]

²¹⁵ GOOGLE-High_Tech-00379327, exhibit 614, email from Mr. Arnon Geshuri on Saturday March 15, 2008.

²¹⁶ GOOGLE-High_Tech-00379327, exhibit 614, email from Mr. Arnon Geshuri on Saturday March 15, 2008.

[REDACTED]

[REDACTED] 217

188. Again, not all markets react immediately since information is not always perfect to all parties to a transaction. In fact, due to issues of internal comparisons, sometimes individuals are hired from the outside (for example) and have relatively higher levels of compensation than others in their workgroup, even once performance is taken into account. As a result, they may see slower growth of pay, relative to others in a similar job as a way to bring compensation together. This is an interesting issue and suggests that issues of internal equity are not necessarily immediately solved. That is, whether bringing in a new person with a higher wage to a new workgroup or raising the wage of someone in a work group does not necessarily mean that the levels of compensation of everyone else need be raised immediately also. Equity in this sense does not mean that all needs to immediately adjust. But equity can still be an issue for the organization that it can solve over time.

IX. How A Structured Compensation System Can Be Related to Systematic Compensation Effects

189. A structured compensation system of the type I have described here can lead to systematic pay effects. In fact, entire pay systems can change at once and everyone can be affected. The concept of equity is related; this is common in the compensation area and widely known by practitioners who design pay systems in organizations.

190. In a recent book (Hallock, 2012), I wrote about what is known as “equity theory,” among a set of psychological theories that are important to compensation. I wrote, “The idea behind equity theory (Adams, 1965) is that workers will be motivated when their perceived inputs (e.g. effort) match their perceived outputs (e.g. pay). If someone thinks she is being

²¹⁷ Deposition of Mr. Alex Lintner, Intuit, March 25, 2013, pages 107-8.

unfairly paid (e.g. others are being paid more for the same perceived effort), she will become uncomfortable and unmotivated".²¹⁸

191. Milkovich, Newman and Gerhart (2011) also discuss equity and fairness.²¹⁹ In fact, issues related to internal equity are one important reason organizations set up internal pay structures as discussed above.

192. Milkovich, Newman and Gerhart (2011) note that "the research suggests that employers judge the fairness of their organization's internal pay structure by making multiple comparisons" including "comparing to jobs similar to their own," "comparing their jobs to others at the same employer," and "comparing their jobs' pay against external pay levels".²²⁰

193. Google's "big bang" compensation increase is an important example of how a stimulus that may appear on its face to affect only a subset of employees, affected all employees. In this example, all employees of Google were given an instantaneous raise of 10%. Google's former Senior Vice President of People Operations (HR) Ms. Shona Brown notes "... we unilaterally, in other words, without a performance orientation to it, we looked across the whole company and we said we're going to give a ten percent – it doesn't – it was a percentile but still, we gave it to everybody".²²¹

194. Other organizations commonly move the entire pay structure all at once, often at least annually. One example of this is displayed in Figure 12 which shows part of the salary structure at Lucasfilm in 2006 and in 2008. The min, mid and max for each of 21 ranks are displayed in the left column (for 2006) and for 23 ranks are displayed in the right graph (for 2008). For the 21 common ranks, the data in the right graph are each precisely 10 percent higher

²¹⁸ Hallock (2012), page 121.

²¹⁹ See Milkovich, Newman and Gerhart (2011), page 83.

²²⁰ Milkovich, Newman and Gerhart (2011), page 83.

²²¹ Deposition of Dr. Shona Brown, Google, January 30, 2013, page 232.

than the data in the left graph. In fact, entire structures move from year to year in all kinds of organizations.

195. If it is the case, in a particular organization or organizations, that those at the top of a pay scale help determine the relative gains of those “below” them, then restricting the pay of those at the top of a grid necessarily affects those below.

X. Market Data and Compensation Surveys

196. Using data on compensation levels at other organizations is regularly a part of formalized pay systems. The kinds of data that firms collect can include market data on particular jobs and salary increase surveys.

197. Each of the Defendants used at least one form of data that included information on compensation at other organizations. For example at: (1) Adobe: Mr. Bruce Chizen, Adobe’s President and CEO from 2000 to 2007 indicated, “[W]e relied heavily on external data.”²²² (2) Apple: Mr. Mark Bentley, Apple’s Senior Director of Recruiting said, “We look at market data, and we come up with a percentage”²²³ (3) Google: Former Senior Vice President of Engineering Mr. Alan Eustace said, “[The] Compensation group would do surveys across the board of what other companies are paying particular people.”²²⁴ (4) Intel: Ms. Patricia Murray, former Vice President of Human Resources (1996 – 2012) indicated, “There’s a large group of people who are ... sharing data obtained from different surveys and groups”²²⁵ (5) Intuit: Vice President of Human Resources Mr. Mason Stubblefield said, “The connections from that into the market data and how we provide market reference data to the organization to assist with

²²² Deposition of Mr. Bruce Chizen, Adobe, March 15, 2013, page 97.

²²³ Deposition of Mr. Mark Bentley, Apple, August 23, 2012, page 262-3.

²²⁴ Deposition of Mr. Alan Eustace, February 2013, page 132.

²²⁵ Deposition of Ms. Patricia Murray, Intel, February 14, 2013, pages 15.

making compensation decisions....”²²⁶ (6) Lucasfilm: Ms. Sharon Coker, former Senior Director of Human Resources indicated in reference to three companies that had survey data, “Lucas provided information to all three of those survey companies”. Q: “Okay. And did Lucas receive information back from all three of those companies?” A: “Yes”.²²⁷ (7) Pixar: Ms. Lori McAdams, Vice President of Human Resources and Administration indicated, “We participate in salary surveys in the industry and – and in – in various fields, and use that information to determine the appropriate salary range.”²²⁸

198. Among the mechanisms by which restrictions on cold-calling could not only suppress the pay of those who would otherwise be cold-called but also the pay of others is the use of external data on pay. To the extent that those external pay data include information that is lower than it otherwise would be (in the absence of the agreements), and firms use external data as described, then propagation will occur.

199. There are several mechanisms by which restricting cold-calling can have broad impacts, including through use of market pay data on jobs and salary increase data. To the extent that external data used for benchmarking are otherwise lower, and firms use those data in setting salaries (as shown in Defendant firms), that information will be brought back into the firm.

200. Also, if due to less competition in the labor market, firms feel less need to increase salaries (say as a means to combat turnover) their budgets for salary increases will be smaller and to the extent that these budgets are used across the organizations (as shown in Defendant firms) the suppressive effects are expected to be propagated broadly.

²²⁶ Deposition of Mr. Mason Stubblefield, Intuit, March 29, 2013, pages 20.

²²⁷ Deposition of Ms. Sharon Coker, Lucasfilm, November 1, 2012, page 285.

²²⁸ Deposition of Ms. Lori McAdams, August 2, 2012, page 29.

XI. Examples of How Market Pressure Led to Pay Changes at Defendants

201. There are clear examples of how pay changed at some Defendants. I will discuss a few examples here, including how market pressure led to pay changes at Defendants.

202. One example is from Adobe. Mr. Chizen, commenting on his time as CEO, noted, “Typically the HR people would come to me and say, we really need to move the ranges based on the Radford data. Here is the Radford data. So it will be me approving a recommendation. Again, the philosophy of the company, which I said, we’re going to pay within this percentile for these – at a high level … for, you know, engineering product, we’ll pay this, for the rest of the organization we’re paying within the Radford, so if Radford moved automatically, the – that would move”.²²⁹ He was later asked “Did that ever happen from time to time, that the market data came back in a way that you couldn’t afford?” He replied, “Typically not. Adobe was such a cash rich company, expense was not my number one concern”.²³⁰

203. Another example is from Google. Google has provided several sets of salary grids (including the one already discussed in Figure 2) and I will discuss only a few here. For example, I start with the 2005 salary structure and compare two sets of categories in two regions.²³¹ The data are displayed in Figure 13. The regions are referred to as “USA Premium” and “USA National” and the categories are T1-T9 (for one set of jobs) and E1-E9 for another. For these two sets of jobs and regions in 2005, I created the spreadsheet in Figure 13. I repeated this tabulation in the same figure using data from Google in 2004.²³²

²²⁹ Deposition of Mr. Bruce Chizen, Adobe, March 15, 2013, page 100.

²³⁰ Deposition of Mr. Bruce Chizen, Adobe, March 15, 2013, page 101.

²³¹ GOOG-HIGH-TECH-00625148 Contains a courtesy reproduction of a compensation spreadsheet titled 2005 Global Ranges - for MQU May-06.xls.

²³² Exhibit 1600.1 “Google 2004 Salary Ranges”.

204. For each set of grades (T1-T9 and for E1-E9) and within each year (2004 and 2005) there are five salaries listed: minimum, lower target, midpoint, upper target and maximum.²³³

205. Multiple comparisons are easily made from these data. For example, using only 2005 data, if one compares “USA Premium” (prem (mv) in Figure 13 to “USA National” (nat (atl) in Figure 13, it is clear to see that nearly every single element of the 45 are precisely 11% different from the “premium” to the “national” scale. This is true both when comparing each T grade and each E grade within 2005 and within 2004. The only exception is the maximum column in 2005 for the T grades. So of 180 possible numbers, 170 of 180 are 11%. This implies a formal structure that is standardized for the company for these pay grades, with a few exceptions.

206. In fact, Google was explicit in changing its salary structure at one point in time and did so universally with the “big bang” in which it increased salaries by 10% across the board.

207. Google documents report that this change in compensation raised the employment costs to the company of more than half a billion dollars per year, as confirmed in the deposition of Mr. Frank Wagner: “So that our increase in cost in total comp across, a net increase of 0.5 billion”.²³⁴

208. Google employee Anuj Chandarana increased the estimated costs of this salary change, noting in an email: “The actual BB [Big Bang] salary spend amounts to [REDACTED] whereas the prelim. estimation from late October was [REDACTED]”,²³⁵

²³³ GOOG-HIGH-TECH-00625148 Contains a courtesy reproduction of a compensation spreadsheet titled 2005 Global Ranges - for MQU May-06.xls and Exhibit 1600.1 “Google 2004 Salary Ranges”.

²³⁴ Deposition of Mr. Frank Wagner, Google, March 7, 2013, page 216.

²³⁵ Email from Anuj Chandarana, Google, December 2, 2010, exhibit 1629.

209. At Lucasfilm Ms. Micheline Chau testified that over time Lucasfilm changed its payment targets from [REDACTED] of the external market benchmark.²³⁶

210. Ms. Chau clarified, “The [REDACTED], again, like I said, depending on the industry circumstance, sometimes was in the – sometimes it was the [REDACTED] for critical talent, and when economic conditions didn’t need it, it came back down to the 50th.²³⁷

211. Data from Lucasfilm also show a systematic structure with pay changes and differences across levels. As noted, I created a figure using data on the 2008 and 2006 salary structure at Lucasfilm in Figure 12.²³⁸

212. In 2008 there are 23 Salary Grades reported for Lucasfilm and in 2006 there are 21 Salary Grades reported for Lucasfilm.²³⁹ As shown in Figure 12, for each of these grades there is a minimum salary, a midpoint salary and a maximum salary reported in each of the two years. There is interesting formality and symmetry to the Lucasfilm structure. For example, within each grade the percentage difference between the minimum and midpoint salary is identical for each grade at 30% (that is the midpoint is 30 percent higher than the minimum in all 23 grades in 2008 and in all 21 grades in 2006).

213. Further at Lucasfilm, within each grade, the percentage difference between the midpoint and maximum salary is identical for each grade at 23% (that is, the maximum is 23 percent higher than the midpoint in all 23 grades in 2008 and in all 21 grades in 2006).

214. In addition, at Lucasfilm, within the three metrics (minimum, midpoint or maximum), the difference between the salary listed at one grade and the salary at the next grade

²³⁶ Deposition of Ms. Micheline Chau, Lucasfilm, February 21, 2013, page 126.

²³⁷ Deposition of Ms. Micheline Chau, Lucasfilm, February 21, 2013, page 127.

²³⁸ LUCAS00188913 (Exhibit 711.29) for 2008 and LUCAS00188912 (exhibit 360) for 2006.

²³⁹ LUCAS00188913 (Exhibit 711.29) for 2008 and LUCAS00188912 (exhibit 360) for 2006.

up is always 12 percent. This is true for every grade, for the minimum, the midpoint and the maximum and in both years.

215. Finally, at Lucasfilm, the entire structure grew by 10 percent from 2006 to 2008.

216. In the deposition of Stephanie Sheehy at Pixar, there is discussion of changes in pay for an entire group. Ms. Sheehy was asked, "Why did Pixar decide it was necessary for the tools group to have their base salaries on average at a higher than 50 percent level?" She answered "We were competing with technology companies in the Bay Area, and our recruiting team was hearing from candidates that they were getting better offers elsewhere".²⁴⁰ She was then asked "What was the percentile level that was the aspiration for this group of employees?"²⁴¹ She replied, "seventy-fifth percentile".²⁴² In the absence of the recruiting team hearing from candidates that those candidates were getting better offers elsewhere, there would have been less pressure to target a higher percentile.

XII. Agreements of the Kind Described in this Case Could Limit Recruiting and Have Negative Consequences on Compensation for Employees of Defendant Firms

217. In this section I will discuss more about how the no cold-calling agreements could have negative consequences for employees, not only for those directly affected by the no cold-calling but also for nearly all other Class members at the Defendant firms.

218. Cold calling is an important part of recruiting in some industries. In fact, in some types of jobs, a large majority of the jobs are filled through this method.

219. At the same time, many employees can see their salaries increase and stay at their current employers by using a competing offer (or even the threat of a competing offer). This is true in many industries.

²⁴⁰ Deposition of Ms. Stephanie Sheehy, March 5, 2013, page 106.

²⁴¹ Deposition of Ms. Stephanie Sheehy, March 5, 2013, page 106-7.

²⁴² Deposition of Ms. Stephanie Sheehy, March 5, 2013, page 107.

220. Restricting cold-calling can have negative consequences for the compensation of those who are cold called or could be cold called, and potentially for nearly all others in their organization.

221. A consideration in this case is that the Defendants are very well-known, celebrated companies. For many reasons these could be thought of as “employers of choice”. By having restrictive recruiting practices at these firms and for those employees of those firms who were highly coveted by other employees, there could be negative consequences for pay and pay growth.

222. To the extent that there is an internal salary structure, any restriction at the top could have a consequent cascading effect on those below. Taking the example of Figure 2, if the pay is restricted for any of the kinds of people who may be at the “top” of the boxes, then the boxes may stop growing from period to period and all employees – even those not at the top of the box can be affected. But, cascading effects on others do not rely on the pay of the highest paid being restricted.

223. There is evidence in economics and in other areas that fairness in wage setting and considerations of peers in compensation matters (e.g. Levine, 1993 and Card, Mas, Moretti, and Saez, 2012).

224. There is substantial evidence from each of the Defendants that fairness and equity considerations mattered.

225. In addition, it is not only the case that those who are paid at the “top of the box” are the ones who are being cold called. In the absence of any cold-calling restrictions or agreements, any employee can be cold called. Even if cold calling affecting pay is restricted at

the mid-point, for example, due to the nature of the structure and use of external data, there can be negative compensation consequences for even those who would not have been cold-called.

226. I also note that no workers have to move from one company to another for no-cold-call agreements to have a negative effect on compensation. This is plain to see. If a recruiter working for company X calls and asks an employee of firm Y of her potential interest in moving, her compensation can't go down and may go up if she can use any potential or realized offer to bid up her own pay internally. So even if not a single employee moves, cold-calling agreements could have negative consequences for pay and pay growth.

227. It should also be noted that performance is not always as easily measured as some argue. In fact, performance is sometimes very hard to measure and social scientists have devised ways to consider compensation in interesting ways precisely because performance is difficult to measure in some situations.²⁴³

228. Intuit also provides an example on competition. In a PowerPoint presentation, Intuit noted: "The more passive the candidate, the fewer competitors for talent".²⁴⁴

229. Also at Intuit, Mr. Chris Galy was asked, "Okay. How – What kind of conversation would you typically have with candidates about compensation in an initial cold-call?" He replied, "It comes up. Again, generally driven – the goal of – the first, primary goal is to generate interest and awareness and see if there's a match. But then the next thing is you don't want to waste people's time and they don't want to waste yours. And so it's – these days, it's generally, you know, hey, give me a ballpark. Are we doing apples to apples, or are we – are you in Yankee Stadium and we're in the Oakland Coliseum?"²⁴⁵ He was then asked, "So is that usually you asking them how much they make or them asking you what the ballpark is for the

²⁴³ See for example, Lazear and Rosen (1981).

²⁴⁴ Powerpoint, Candidate Generation, Intuit, December 12, 2006, INTUIT_034255, exhibit 2135.25.

²⁴⁵ Deposition of Mr. Chris Galy, Intuit, March 20, 2013, page 165.

position, or could it be either way?" He replied, "It could be either way. But generally speaking, I like to leave it up to them to tell me what their experiences are. So ... yeah, I mean, it could be either way".²⁴⁶

XIII. Given the Defendants' Formalized Pay Structures and Compensation Design, Effects on Compensation Could be Widely Felt

230. Given the Defendants' formalized pay structures, compensation design, use of external market data, and adherence to principles of equity and fairness, the effects on compensation connected to the do-not-call agreements can be widespread and systematic.

231. Elsewhere in this report, it is documented that the Defendant firms had formalized compensation systems. It is also documented that the Defendant firms were interested in internal equity and issues of fairness. It is also documented how pay changed at Defendant companies. A direct impact on pay could occur if an employee did not receive a cold call, or if the upward wage pressures on any of the employees in related groups or job families were disrupted.

232. One way that pay can be lowered at Defendant firms for nearly all Class members has to do with the "top" workers. The Defendants were very interested in attracting and retaining many extraordinary workers. The Defendant firms include very well-known and prestigious brands for employees. Some of the cold-calling restrictions were clearly targeted to this very high-end type of worker. I have shown previously that it is straightforward to show that cold-calling can have a direct impact on individual workers. If the "top of the box" is, therefore, lowered in the presence of cold-calling restrictions, the entire box may be as well, thus affecting nearly all other Class members. But, again, the restrictions need not only affect the highest paid workers for calling restriction to have effects on others.

²⁴⁶ Deposition of Mr. Chris Galy, Intuit, March 20, 2013, page 166.

233. There are many other ways in which restrictions on cold calling could lead to suppression of pay on Class members here, including effects due to internal equity within specific work groups, effects due to equity concerns across different work groups, the use of market survey data on pay levels, the use of salary budget increase surveys, and the compensation budget planning process.

234. Internal equity concerns can impact compensation, even among those who may not otherwise be cold-called during a period of time, due to relative comparisons. To the extent that organizations are concerned with principles of internal equity, if a particular employee or group of employees is not called due to cold-calling restrictions, there will be less pressure on the compensation of similar workers.

235. Equity concerns can apply beyond specific work groups or occupations or types of jobs. As a result, restrictions on the compensation of workers in one job type can lead to suppression in other jobs.

236. Another way in which wages can be influenced is external market data. Here, there is evidence that Defendants benchmark their data to external sources. But here, to the extent that pay is lowered at other firms through anti-competitive behavior, the market data they use for their own structure will be lower. And, as a result, their own pay levels will be lower than they would be in the absence of such agreements.

237. Another way organizations such as Defendants use market data is in considerations of the size of the next period's (e.g. year) raise pool. So, in addition to collecting data (for example) on the pay levels in specific jobs, firms also seek information from market data on salary budgets that other organizations are planning.²⁴⁷ To the extent that other firms are

²⁴⁷ These data can be collected from consulting firms who aggregate data but there is evidence that some Defendants reached out directly to other Defendants. For example, Pixar's Vice President of Human Resources and

planning smaller increases due to restrictions on cold-calling, these estimates will be benchmarked downward due to the restrictions.

238. An additional way that anti-competitive behavior by Defendants could impact compensation is through the related budget-planning process. When organizations consider the pool of resources for increasing compensation in the next period (e.g. year), they can consider a host of information, including market survey data, market budget compensation increase data, external economic conditions, employee turnover and other pressures. To the extent that market pressure is lower, there is less pressure to have larger compensation increase budgets.

239. Relatedly, yet another way restrictions on cold-calling could lead to effects on those beyond those who would have otherwise immediately been cold-called arises because of Defendants' practice of targeting compensation at a certain market level of pay. In the absence of external pressure related to restrictions, organizations will be under less pressure to increase this target percentage. An example that is related comes from Lucasfilm where Ms. Micheline Chau testified that over time Lucasfilm changed its payment targets from the [REDACTED] to [REDACTED] of the external market benchmark.²⁴⁸ Ms. Chau said, "The [REDACTED], again, like I said, depending on the industry circumstance, sometimes was in the – sometimes it was the [REDACTED] for critical talent, and when economic conditions didn't need it, it came back down to the [REDACTED]."²⁴⁹

Administration Lori McAdams wrote other companies, including Defendant Lucasfilm, to ask: "What is your salary increase budget for FY '07? Ours is 4%, but we manage it closer to 3% on average. Are you doing anything close, more or less? (LUCAS00184664, exhibit 122). There is also evidence that Google directly reached out to other Defendants and was told that merit budgets were [REDACTED], compared to Google, 3.9% (GOOG-HIGH-TECH-00336878, exhibit 621.3). There is also evidence that Apple used data for developing percentage raises. Mr. Mark Bentley, Apple's Senior Director of Recruiting noted, "We look at market data, and we come up with a percentage". (Deposition of Mr. Mark Bentley, Apple, August 23, 2012, pages 262-3).

²⁴⁸ Deposition of Ms. Micheline Chau, Lucasfilm, February 21, 2013, page 126.

²⁴⁹ Deposition of Ms. Micheline Chau, Lucasfilm, February 21, 2013, page 127.

XIV. Conclusions

240. Based on the documents I have considered and my knowledge of labor markets and compensation systems I have a number of conclusions. These views are expressed in the report and some are summarized here.

241. The Defendants had formalized compensation systems. These include using market surveys, survey data, clear structures, grades, and many other features of formalized compensation systems.

242. The Defendants made use of the ideas of compensation beyond salary. These other forms of compensation include components such as bonuses and stock.

243. Issues of internal equity and equity in general were important to the Defendant firms. Whether they used the terms or not, the concepts of internal equity and also generally treating similar employees similarly were important to Defendant firms.

244. There is documented evidence that pay moved in Defendant firms in systematic and structured ways.

245. A compensation system that includes pay for performance is not mutually exclusive from one that takes internal equity into account.

246. Restrictions on cold-calling clearly had impacts on employees among the Defendant firms. In particular, restrictions on cold-calling hampered compensation levels for employees. The restrictions could be expected to hamper levels of compensation for those who would have been cold-called and for all or nearly all Class members of Defendant firms.

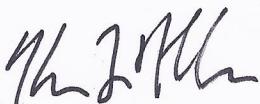
247. Restrictions on cold-calling could be expected to limit and have negative consequences on employee compensation for those Class members directly involved and for nearly all Class members. Given the formalized pay structures, use of external market data, and

compensation design in Defendant firms, nearly all Class Members could be expected to have pay that would otherwise be higher.

248. The formalized systems in place at the Defendants relied on structures, external data from the market and the like, and notions of equity were present at Defendants. As a result, those effects cycle on to other employees and their levels of compensation. Therefore, the formal compensation structures could be expected to lead to an effect on nearly all Class members.

249. Although I have not been asked to estimate the magnitude of damages in this case, based on my knowledge of compensations systems and the materials considered, I believe that agreements against cold calling, such as the agreements at issue in this case, are predicted to suppress the compensation of all or nearly all Class members, including those with different job titles.

250. I reserve the right to supplement this report in view of any new material or information provided to me after the date of this report.



Kevin F. Hallock

October 27, 2013

APPENDIX A

Kevin F. Hallock CV

KEVIN F. HALLOCK

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HOME

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Born: March 10 1969, Palo Alto, CA
Married: Tina Hallock in 1991
Children: Emily 1994, Tyler 1998

CURRENT POSITIONS

Donald C. Opatrny '74 Chair of the Department of Economics, Cornell University (2012 – present)

Joseph R. Rich '80 Professor, Cornell University (2011 – present)

Professor, Department of Economics, Cornell University (2011 – present)

Professor, Department of Human Resource Studies, Cornell University (2007 – present)

Director, Institute for Compensation Studies (ICS), Cornell University (2009 – present)

Fellow, National Academy of Human Resources (NAHR), (2013 – present)

Compensation Committee Member, Guthrie Health, Sayre PA (2012 – present)

Research Associate, Labor Studies, National Bureau of Economic Research (2003 - present)

Member, Board of Directors of Society of Certified Professionals, WorldatWork (2012 - present)

Faculty Fellow, Atkinson Center for a Sustainable Future (ACSF), (2012 – present)

Distinguished Principal Researcher, The Conference Board (2011 – present)

Fellow, Stanford University Center for the Study of Poverty and Inequality (2006 – present)

Faculty Affiliate, Center for the Study of Inequality, Cornell University (2007 – present)

EDUCATION

Princeton University – Ph.D. Economics, 1995.

Princeton University – M.A. Economics, 1993.

University of Massachusetts at Amherst – B.A. Economics, *Summa Cum Laude*, 1991.

Hopkins Academy, Hadley Massachusetts, Valedictorian, 1987.

OTHER AND PREVIOUS POSITIONS

Chair, Department of Labor Economics, Cornell University (2010 – 2011)

Associate Chair, Department of Economics, Cornell University (2011 – 2012)

Professor, Department of Labor Economics, Cornell University (2007 – 2011)

Chair, Cornell University Financial Policy Committee (2007 – 2008)

Director of Research, Center for Advanced Human Resource Studies (CAHRS), Cornell University (2007 – 2012)

Senior Fellow, Executive Compensation, Board Compensation and Board Practices, The Conference Board (2008 – 2011)

House Fellow, Carl Becker House, Cornell University (2011 – 2013)

Member, Board of Directors, WorldatWork (2009 – 2011)

Member, WorldatWork Executive Compensation Advisory Board (2007 – 2009)

Faculty Member, Graduate Field of Economics, Cornell University (2005 - present)

Faculty Member, Graduate Field of Industrial & Labor Relations, Cornell University (2006 – present)

Associate Professor of Human Resource Studies, ILR School, Cornell University (2005 - 2007)

Acting Chair, Department of Human Resource Studies, ILR School, Cornell University (Fall 2006)

Associate Professor of Economics and of Labor and Industrial Relations, University of Illinois at Urbana-Champaign (2001 – 2005)

Associate Professor of Finance, University of Illinois at Urbana-Champaign (2002 – 2005)

Co-Director, Center for Human Resource Management, University of Illinois (2004 – 2005)

Visiting Associate Professor, Institute of Government and Public Affairs, University of Illinois at Urbana-Champaign (2005)

Research Consultant, Research Department, Federal Reserve Bank of Chicago (2003 – 2005)

Visiting Assistant Professor, Department of Economics and Research Associate, Industrial Relations Section, Princeton University (1998 - 1999)

Assistant Professor of Economics and of Labor and Industrial Relations, University of Illinois at Urbana-Champaign (1995 - 2001)

HONORS AND FELLOWSHIPS

Fellow, National Academy of Human Resources (NAHR), 2013

Richard A. Lester Award for Outstanding Book in Industrial Relations and Labor Economics, Princeton University, 2012.

John T. Dunlop Outstanding Young Scholar Award, Industrial Relations Research Association (Now Labor and Employment Relations Association), 2004.

Outstanding Teaching Award (small class), University of Illinois Economics Graduate Student Association, 2001-2002.

Faculty Teaching Excellence Award, University of Illinois Institute of Labor and Industrial Relations, 2000.

Outstanding Teaching Award (small class), University of Illinois Economics Graduate Student Association, 2000-2001.

Albert Rees Prize for Best Dissertation in Labor Economics from Princeton in the Last Six Years (awarded every two years), 1999.

University of Illinois College of Commerce and Business Administration Award for Excellence in Research (first annual Assistant Professor award), 1999.

University of Illinois list of teachers ranked excellent by their students, 1997, 1998, 1999, 2000, 2002.

Princeton University Industrial Relations Section Fellowship, September 1991-May 1995.

United States Department of Education Jacob K. Javits Fellowship, September 1991-May 1995.

Massachusetts William Field Alumni Scholar, 1991.

Phi Beta Kappa, 1990.

Valedictorian, Hopkins Academy, Hadley Massachusetts, 1987.

Paul Brown Senior Baseball Award, Hopkins Academy, Hadley Massachusetts, 1987.

Massachusetts High School State Baseball Champions, 1985. Third base, Hopkins Academy.

BOOKS

Pay: Why People Earn What They Earn and What You Can Do Now to Make More, Cambridge University Press September 2012.

Managing Layoffs: Why Firms Fire Workers and How it Affects the Bottom Line, Cambridge University Press, under contract.

The Economics of Executive Compensation, Volume II, (co-editor with Kevin J. Murphy), Edward Elgar Publishing Limited, Cheltenham, England, 1999.

BOOKS (continued)

The Economics of Executive Compensation, Volume I, (co-editor with Kevin J. Murphy), Edward Elgar Publishing Limited, Cheltenham, England, 1999.

Economic Institutions and The Demand and Supply of Labor: The Collected Essays of Orley Ashenfelter, Volume III, editor, Edward Elgar Publishing Limited, Cheltenham, England, 1997.

Education, Training and Discrimination: The Collected Essays of Orley Ashenfelter, Volume II, editor, Edward Elgar Publishing Limited, Cheltenham, England, 1997.

Employment, Labor Union, and Wages: The Collected Essays of Orley Ashenfelter, Volume I, editor, Edward Elgar Publishing Limited, Cheltenham, England, 1997.

Labor Economics, Volume IV: Labor Market Discrimination, Labor Mobility and Compensating Wage Differentials, (co-editor with Orley Ashenfelter), Edward Elgar Publishing Limited, Cheltenham, England, 1995.

Labor Economics, Volume III: Unemployment, Trade Unions and Dispute Resolution, (co-editor with Orley Ashenfelter), Edward Elgar Publishing Limited, Cheltenham, England, 1995.

Labor Economics, Volume II: Employment, Wages and Education, (co-editor with Orley Ashenfelter), Edward Elgar Publishing Limited, Cheltenham, England, 1995.

Labor Economics, Volume I: Labor Supply and Labor Demand, (co-editor with Orley Ashenfelter), Edward Elgar Publishing Limited, Cheltenham, England, 1995.

PUBLISHED AND FORTHCOMING PAPERS

“Data Improvement and Labor Economics,” *Journal of Labor Economics*, 31(2), Part 2, April 2013, S1-S16.

“Adverse Selection and Incentives in an Early Retirement Incentive Program,” (with Kenneth Whelan, Ronald Ehrenberg and Ronald Seeber), *Research in Labor Economics*, Volume 36, 159-190, 2012.

“Job Loss and Effects of Firms and Workers,” (with Michael Strain and Doug Webber), in Cary Cooper, Alankrita Pandey and James Quick eds. *Downsizing: Is Less Still More?*, Cambridge University Press, 2012.

“New Data for Answering Old Questions Regarding Employee Stock Options,” (with Craig Olson), in *Labor and The New Economy*, Katharine G. Abraham, James R. Spletzer and Michael Harper, editors, National Bureau of Economic Research, 2010.

“Executive Pay and Firm Performance: Methodological Considerations and Future Directions,” (with Beth Florin and Douglas Webber), *Research in Personnel and Human Resources Management*, 2010.

“The Geography of Giving: The Effect of Corporate Headquarters on Local Charities,” (with David Card and Enrico Moretti), *Journal of Public Economics*, April 2010, 94(3), 222 -234.

“CEO Pay for Performance Heterogeneity: Examples Using Quantile Regression,” (with Clayton Reck and Regina Madalozzo), *Financial Review*, February 2010, 1-19.

PUBLISHED AND FORTHCOMING PAPERS (continued)

“Job Loss and the Fraying of the Implicit Employment Contract,” *Journal of Economic Perspectives*, 23(4), Fall 2009, 69-93.

“The Changing Relationship Between Job Loss Announcements and Stock Prices: 1970-1999,” (with Henry Farber), *Labour Economics*, 16(1), January 2009, 1-11.

“Layoffs in Large U.S. Firms from the Perspective of Senior Management,” *Research in Personnel and Human Resources Management*, volume 25, 2006.

“Assessing the Impact of Job Loss on Workers and Firms,” (with Kristin Butcher), *Chicago Fed Letter*, Federal Reserve Bank of Chicago, April 2006.

“Mass Layoffs and Management Turnover,” (with Sherrilyn Billger), *Industrial Relations*, 44(3), July 2005.

“Bringing Together Policymakers, Researchers, and Practitioners to Discuss Job Loss,” (with Kristin Butcher), *Economic Perspectives*, Federal Reserve Bank of Chicago, 2nd Quarter, 2005.

“Does Managed Care Change the Management of Nonprofit Hospitals? Evidence from the Executive Labor Market,” (with Marianne Bertrand and Richard Arnould), *Industrial and Labor Relations Review*, 58(3), April 2005.

“Job Loss: Causes, Consequences, and Policy Responses,” (with Kristin F. Butcher), *Chicago Fed Letter*, Federal Reserve Bank of Chicago, Number 207, October 2004.

“Managerial Pay in Nonprofit and For-Profit Organizations,” in *Improving Leadership in Nonprofit Organizations*, Sarah Smith-Orr and Ron Riggio, editors, Jossey-Bass, 2004, 76 – 101.

“Managerial Pay and Governance in American Nonprofits,” *Industrial Relations*, 41(3), July 2002, 377-406.

“When Unions ‘Mattered’: Assessing the Impact of Strikes on Financial Markets: 1925-1937,” (with John DiNardo), *Industrial and Labor Relations Review*, 55(2), January 2002, 219 - 233.

“Quantile Regression,” (with Roger Koenker), *The Journal of Economic Perspectives*, 15(4), Fall 2001, 143-156.

“The Gender Gap in Top Corporate Jobs,” (with Marianne Bertrand), *Industrial and Labor Relations Review*, 55(1), October 2001, 3-21.

“Individual Heterogeneity in the Returns to Schooling: Instrumental Variables Quantile Regression using Twins Data,” (with Omar Arias and Walter Sosa), *Empirical Economics*, 26(1), March 2001, 7-40. Reprinted in *Economic Applications of Quantile Regression*, Bernd Fitzenberger, Roger Koenker, and Jose A. F. Machado, Editors, Physica-Verlag.

“Compensation in Nonprofit Organizations,” *Research in Personnel and Human Resources Management*, edited by Gerald R. Ferris, Elsevier Science, Volume 19, 2000, 243-294.

PUBLISHED AND FORTHCOMING PAPERS (continued)

“The Timeliness of Performance Information in Determining Executive Compensation,” (with Paul Oyer), *Journal of Corporate Finance*, 5(4), December 1999, 303-321.

“Capital Markets and Job Loss: Evidence from North America,” (with Henry Farber), *Wirtschafts Politische Blatter*, 46(6), December 1999, 573-577.

“Dual Agency: Corporate Boards with Reciprocally Interlocking Relationships,” in *Executive Compensation and Shareholder Value: Theory and Evidence*, edited by Jennifer Carpenter and David Yermack, Kluwer, 1999, 55-75.

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“Seniority and Monopsony in the Academic Labor Market: Comment,” *The American Economic Review*, 85(3), June 1995, 654-657.

WORKING PAPERS

“Disabilities, Occupations and Returns to Skills and Tasks,” (with Xin Jin and Linda Barrington), September 2013.

“The Wage Gap and The Total Employment Gap by Disability Status,” (with Xin Jin and Linda Barrington), September 2013.

“Employees’ Choice of Method of Pay,” (with Craig Olson), February 2012.

“Executive Compensation in American Unions,” (with Felice Klein), January 2012.

“Senior HR Leaders in the “Top 5”: Evidence on Pay, Relative Pay, and Performance Using Data from 1,500 Firms Over a Decade,” (with Matthew Allen and John Haggerty), January 2008.

“The Value of Stock Options to Non-Executive Employees,” (with Craig Olson), March 2007.

WORKING PAPERS (continued)

“Are Formal Corporate News Announcements Still Newsworthy?: Evidence from 30 Years of US Data on Earnings, Splits, and Dividends” (with Farzad Mashayekhi), July 2006.

“The Gender Pay Gap for Managers in Nonprofits,” January 2002.

“Unions and the Labor Market for Managers,” (with John DiNardo, and Jorn-Steffen Pischke), August 2000.

“A Simple Empirical Model of Welfare or Work Incentives for Single Mothers,” June 1995.

BOOK REVIEWS

Review of *Personnel Economics in Imperfect Labour Markets*, by Pietro Garibaldi, Oxford University Press, *Journal of Economic Literature*, December 2007.

Review of *Pay Without Performance: The Unfulfilled Promise of Executive Compensation*, by Lucian Bebchuk and Jesse Fried, Harvard University Press, *Industrial and Labor Relations Review*, 59(4), July 2006, 672-674.

OTHER WORK IN PROGRESS

“Pay and Performance for University Presidents,” (with Orley Ashenfelter, Sherrilyn Billger and Ronald Ehrenberg)

“The Illinois Historical Salary Census,” (with David Card)

“Estimating the Expected Cost of Employee Stock Options” (with Craig Olson)

“Job Matching and Employment Duration” (with Todd Elder)

“The Night Shift” (with Darren Lubotsky and Douglas Webber)

“Quantile Regression for Management”

“Sleepy Traders and Stock Prices” (with Lawrence DeBrock and Joe Price)

RESEARCH REPORTS

The 2011 U.S. Top Executive Compensation Report, (with Judit Torok), The Conference Board, 2011.

U.S. Salary Increase Budgets for 2012, (with Judit Torok), The Conference Board, 2011.

The 2010 U.S. Top Executive Compensation Report, (with Judit Torok), The Conference Board, 2010.

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RESEARCH REPORTS (continued)

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COLUMNS

“The Wage Gap Versus the Total Compensation Gap,” *Workspan*, December 2013, forthcoming.

“Employee Choice Over Pay Mix,” *Workspan*, November 2013, forthcoming.

“Data Sources on Compensation and Individuals with Disabilities,” *Workspan*, October 2013, 12-13.

“CEO Pay Mix,” *Workspan*, September 2013, 12-13.

“Compensation Research Summer Camp,” *Workspan*, August 2013, 12-13.

“Compensation Tournaments,” *Workspan*, July 2013, 12-13.

“CEO Pay and Layoffs,” *Workspan*, June 2013, 12-13.

“Baseball and Thoughts on Pay Dispersion in Teams,” *Workspan*, May 2013, 12-13.

“Pay in Nonprofits,” *Workspan*, April 2013, 12-13.

“Valuing Employee Stock Options,” *Workspan*, March 2013, 10-11.

“Pay and Relative Income Within Couples,” *Workspan*, February 2013, 12-13.

“Presidential Pay,” *Workspan*, January 2013, 12-13.

COLUMNS (continued)

“Top Athlete Pay,” *Workspan*, December 2012, 12-13.

“Economic Effects of the Minimum Wage,” *Workspan*, November 2012, 12-13.

“How The Olympics Remind Us About Compensation,” *Workspan*, October 2012, 12-13.

“CEOs Off the Clock,” *Workspan*, September 2012, 13-14.

“Vacation as Compensation,” *Workspan*, August 2012, 13-14.

“Paying Professors” *Workspan*, July 2012, 12-13.

“Does Graduating in a Bad Economy Penalize Your Pay for Life?” *Workspan*, June 2012, 13-14.

“Governance and Executive Pay in Nonprofits?” *Workspan*, May 2012, 13-14.

“Why Do We Tip?” *Workspan*, April 2012, 12-13.

“Massive Kinked Bonuses,” *Workspan*, March 2012, 12-13.

“Go Big: The Firm-Size Pay (and Pay-Mix) Effect,” *Workspan*, February 2012, 12-13.

“Nothing Lasts Forever: A Different Way to Structure Severance,” *Workspan*, January 2012, 12-13.

“Is There Deadweight Loss in Holiday Rewards?” *Workspan*, December 2011, 11-12.

“Pay System Gender Neutrality,” *Workspan*, November 2011, 11-12.

“Does More Education Cause Higher Earnings,” *Workspan*, October 2011, 12-13.

“Say On Pay and Compensation Design,” *Workspan*, September 2011, 10-11.

“Lessons in Pay Design from the Farm,” *Workspan*, August 2011, 11-12.

“Linking Compensation and Job Losses During a Recession,” *Workspan*, July 2011, 12-13.

“Does That Pay Practice Really Have Any Impact?” *Workspan*, June 2011, 12-13.

“Pay Ratios and Inequality,” *Workspan*, May 2011, 14-16.

“Pay Secrecy and Relative Pay,” *Workspan*, April 2011, 10-11.

“Motivating with Efficiency Wages and Delayed Payments,” *Workspan*, March 2011, 10-11.

“The Relationship Between Company Size and CEO Pay,” *Workspan*, February 2011, 10-11.

“The Disconnect Between Employer Cost and Employee Value,” *Workspan*, January 2011, 10-11.

REFEREE AND EDITORIAL SERVICE

(Advisory Board, Compensation and Benefits Review, 2012 – present)

(Advisory Board, Journal of Organizational Effectiveness: People and Performance, 2012 – present)

(Associate Editor, Journal of Labor Economics, 2008 – 2012)

(Associate Editor, Labour Economics, 2008 – present)

(Associate Editor, Economics Bulletin, 2005 – July 2010)

(Editorial Board, Industrial and Labor Relations Review, 2006 – present)

Academy of Management Journal, Advances in the Economics of Sport, American Economic Journal: Applied Economics, American Economic Review, British Journal of Industrial Relations, Economic Theory, Eastern Economic Review, Economic Inquiry, Economic Journal, Economics Bulletin, Economics of Education Review, Economics and Politics, Economics Letters, Education and Finance Policy, Empirical Economics, Explorations in Economic History, Financial Review, Industrial and Labor Relations Review, Industrial Relations, International Economic Review, International Journal of Manpower, International Journal of Organizational Analysis, International Migration Review, International Review of Economics and Finance, Journal of Business, Journal of Business and Economic Statistics, Journal of Corporate Finance, Journal of Human Resources, Journal of Economic Psychology, Journal of Finance, Journal of Industrial Economics, Journal of Labor Economics, Journal of Law Economics and Organization, Journal of Political Economy, Journal of Public Economics, Journal of Urban Economics, Labour Economics, The Manchester Review, Nonprofit and Voluntary Sector Quarterly, Nonprofit Management and Leadership, Quarterly Journal of Business and Economics, Quarterly Journal of Economics, Quarterly Journal of Economics and Finance, Review of Economics and Statistics

National Science Foundation, Social Science and Humanities Research Council, United States Census Bureau, Various Publishers

GRANTS

United States Department of Education, National Institute on Disability and Rehabilitation Research (NIDRR), Rehabilitation Research Training Center (RRTC) on Employer Practices Related to Employment Outcomes for Individuals with Disabilities (co-PI, with Susanne Bruyere and Linda Barrington), \$4 million, 2010 – 2015.

Compensation in Asia, (CAHRS), 2011 – 2012.

International Compensation, (CAHRS), 2010- 2011.

Costs of Compensation versus Value to the Organization (CAHRS), 2009 – 2010.

Why Managers Fire Workers and How it Affects the Bottom Line (CAHRS), 2008-2009.

Managing Layoffs, Cornell Center for Human Resource Management (CAHRS), 2007-2008.

Stock Options, (with Craig Olson), Cornell Center for Human Resource Management (CAHRS), 2006-2007.

When and Why Do Firms Make Layoffs?, Alfred P. Sloan Foundation, 2001 - 2003.

The Illinois Historical Salary Study, (with David Card), University of Illinois Campus Research Board, 2003.

What Happens to Firms When Workers are Let Go?, Illinois Center for Human Resource Management, 2001-2002.

Stock Options for Employees in Large U.S. Firms, Illinois Center for Human Resource Management, (with Craig Olson), 2001-2002.

Studies in Executive Compensation, University of Illinois Campus Research Board, 2001-2002.

What Drives Nonprofits? Evidence from Managerial Pay, Performance, and Market Competition in Nonprofit Hospitals, National Bureau of Economic Research, (with Richard Arnould, and Marianne Bertrand), 1999-2000.

Computation Problems in Applied Economics, Intel Corporation, (with Lawrence DeBrock and Roger Koenker), 1998.

Determinants of Managerial Compensation in American Charities, American Compensation Association, 1997-1998.

Unions and Managerial Pay, American Compensation Association, (with John DiNardo and Jorn-Steffen Pischke), 1997-1998.

How to Make Incentive Pay Programs More Successful: Linking Sales Compensation Plans to Firm Performance, Center for Human Resource Management, University of Illinois, (with Paul Oyer), 1997-1998.

Executive Compensation, Firm Layoffs, and Firm Performance, United States Department of Labor, 1996.

SEMINARS AND PRESENTATIONS

University of Arizona, Brigham Young University, University of California at Berkeley, University of California at Santa Barbara, Case Western Reserve University, University of Chicago, Claremont-McKenna College, Cornell University, Harvard University, University of Illinois at Chicago, University of Illinois at Urbana-Champaign, Illinois State University, Kansas State University, University of Konstanz, Marquette University, Massachusetts Institute of Technology, McGill University, University of Michigan, Michigan State University, University of Missouri, New York University, Northwestern University, The Ohio State University, Princeton University, University of Pennsylvania, Indiana University – Purdue University at Indianapolis, Queen's University, University of Rochester, Stanford University, Texas A&M University, University of Wisconsin at Madison, University of Wisconsin at Milwaukee, Yale University

American Economic Association, Econometric Society, European Society of Labour Economists, Industrial Relations Research Association, Labor and Employment Relations Association, National Bureau of Economic Research, Society of Labor Economists, WorldatWork

TEACHING

Ph.D. Students advised, department, year of degree, and initial placement (* chair of committee):

Pablo Acosta*, Economics, 2006, World Bank
 Ji-Young Ahn, ILIR, Illinois, 2009, Ehwa Women's College, South Korea
 Carole Amidon, Economics, 2002, ERS Group, Florida
 Vic Anand, Accounting, 2013, Emory University
 Michelle Arthur, ILIR, 2000, Purdue University
 David Balan*, Economics, 2000, Federal Trade Commission
 Sherrilyn Billger*, Economics, 2000, Union College
 Paul Byrne, Economics, 2003, Wabash College
 John Deke*, Economics, 2000, Mathematica Policy Research, Princeton NJ
 Emre Ekinci, Economics, 2012, Universidad Carlos III
 Todd Fister*, ILIR, 2003, Kimberly-Clark, Atlanta
 R. Kaj Gittings, Economics, 2009 expected, Louisiana State University
 Lynn Gottschalk, Economics, 2005 Federal Trade Commission
 Weishi (Grace) Gu, Economics, 2013, UC-Santa Cruz
 Juliana Guimaraes*, Economics, 2001, Universidade Nova de Lisboa, Portugal
 John Haggerty, HR Studies, 2010, Cornell University
 Dan Hanner, Economics, 2005, Federal Trade Commission
 Jeffrey Hemmeter, Economics, 2004, University of California, Davis
 Xin Jin, Economics (current)
 Kandice Kapinos, ILIR, 2007, St. Olaf College
 David Kaplan, ILIR, 2000, James Madison University
 GiSeung Kim, Economics, 2001, LG Economics Research Group, Korea.
 Elizabeth Kiss, Ag. Economics, 2000, Purdue University
 Felice Klein*, HR Studies, 2012, Michigan State University
 Nolan Kopkin, Economics (2013), University of Wisconsin, Milwaukee.
 Gregory Kordas, Economics, 2000, University of Pennsylvania

TEACHING (continued)

Fidan Kurtulus*, Economics, 2007, University of Massachusetts at Amherst
Regina Madalozzo*, Economics, 2002, Brazilian Institute of Capital Markets
Farzad Mashayekhi*, Economics, 2003, Moody's K M V, San Francisco
Catherine McClean, Economics, 2012, University of Pennsylvania
Daniel Morillo, Economics, 2000, PanAgora Asset Management, Boston
Ben Ost, Economics, 2011, University of Illinois at Chicago
Heather Radach, Economics, 2001, Lexecon, Chicago
Clayton Reck*, Economics, 2004, ERS Group, Florida.
Eduardo Ribeiro, Economics, 1995, Universidade Federal do Rio Grande do Sul, Brazil
Laura Ripani*, Economics, 2004, World Bank.
Patricia Simpson, ILIR, 1997, Loyola University, Chicago
Michael Strain*, Economics, 2012, American Enterprise Institute
Mary Taber, ILIR, 1999, Skidmore College
Maria Tannuri, Economics, 2000, Universidade de Brasilia, Brazil
Rosemary Walker, Economics, 2000, Wabash College
Ying Wang, Economics, 2013, Analysis Group
Douglas Webber, Economics, 2012, Temple University
Leigh Wedenoja, Economics (current)
Olga Yakusheva*, Economics, 2005, Marquette University
Chen Zhao, Economics, 2013, Analysis Group

Courses Taught:

PAY (undergraduate) at Cornell

Managing Compensation (MILR) at Cornell

Executive Compensation (MILR) at Cornell

Job Loss (Undergraduate) at Cornell

Freshman Colloquium (Undergraduate) at Cornell

Finance for Human Resources (M.H.R.I.R.) at Illinois and (MILR) at Cornell

Labor Economics for Managers (M.H.R.I.R.) at Illinois

Managerial Economics (Masters of Science in International Finance) at Illinois

Labor Economics I (Ph.D.) and Labor Economics II (Ph.D.) at Illinois

Applied Econometrics (Masters of Science in Policy Economics) at Illinois

Microeconomic Principles (Undergraduate) at Illinois

Labor Problems (Undergraduate) at Illinois

Labor Economics (Undergraduate) at Illinois and Princeton

UNIVERSITY SERVICE

2012 – 2013 (Cornell)

Donald C. Opatrny '74 Chair of the Department of Economics
Director, Institute for Compensation Studies (ICS)
Member, Search Committee for the Dean of the College of Arts and Sciences
Member, Department of Economics Recruiting Committee
Member, Cornell University Council on Mental Health and Welfare

2011 – 2012 (Cornell)

Director, Institute for Compensation Studies (ICS)
Chair, Recruiting Committee, Department of Economics
Associate Chair, Department of Economics
Director of Research and Board Member, Center for Advanced HR Studies (CAHRS)
Member, Cornell University Council on Mental Health and Welfare

2010 – 2011 (Cornell):

Chair, Department of Labor Economics
Director, Institute for Compensation Studies (ICS)
Chair, Recruiting Committee, Department of Labor Economics
Recruiting Committee, Department of Policy Analysis and Management
Recruiting Committee, Department of Human Resource Studies
Director of Research and Board Member, Center for Advanced HR Studies (CAHRS)
Member, Cornell University Council on Mental Health and Welfare
Member, ILR Admissions Committee

2009 – 2010 (Cornell):

Provost's Budget Model Task Force
Campus Task Group on Student Services
Chair, ILR Task Group on Student Services
Institute for the Advancement of Economics at Cornell
Director, Compensation Research Initiative (CRI)
Labor Economics Recruiting Committee
Director of Research, Center for Advanced Human Resource Studies (CAHRS)
Center for Advanced Human Resource Studies (CAHRS) Board

2008 – 2009 (Cornell):

Cornell University Financial Policy Committee
Institute for the Advancement of Economics at Cornell
Director of Research, Center for Advanced Human Resources Studies (CAHRS)
Undergraduate Committee, ILR School
Center for Advanced Human Resources Studies (CAHRS) Board

2007-2008 (Cornell):

Chair, Cornell University Financial Policies Committee
Economics Field Review Committee
Director of Research, Center for Advanced Human Resource Studies (CAHRS)
Review Panel for Cornell Institute for the Social Sciences
Center for Advanced Human Resource Studies (CAHRS) Board
Undergraduate Committee, ILR School

UNIVERSITY SERVICE (continued)

2006 – 2007 (Cornell):

Interim-Chair, Human Resource Studies Department, ILR School Cornell (Fall)
Cornell University Financial Policies Committee (2006 – 2009), Co-Chair (2006 - 2007)
Labor Economics Search Committee
Review Panel for Cornell Institute for the Social Sciences
Center for Advanced Human Resource Studies (CAHRS) Board
Undergraduate Committee, ILR School

2005 – 2006 (Cornell):

Campus Financial Policies Committee (Spring)
Committee on Faculty Recruitment and Retention in the Social Sciences
ILR Committee to Evaluate the Math Requirement
Departmental Tenure Review Committee
Center for Advanced Human Resource Studies (CAHRS) Board

2004 – 2005 (Illinois):

ILIR On-Campus Committee, Chair
ILIR Executive Committee
University of Illinois Center for Human Resource Management, Co-Director

2003 – 2004 (Illinois):

Economics Junior Recruiting Committee, Chair
Economics Advisory Committee to the Head
ILIR On-Campus Committee, Chair
University of Illinois Executive Board of Center for Human Resource Management

2002 – 2003: (Illinois) On sabbatical (fall)

ILIR Executive Committee
Economics Search Committee for new Head of Department
University of Illinois Executive Board of Center for Human Resource Management
Campus Admissions Committee
College of Business Educational Policy Committee

2001 – 2002 (Illinois):

ILIR Executive Committee
ILIR Ph.D. Advisory Committee
Economics/LIR Faculty Search Committee
Economics Capricious Grading Committee
Economics Labor Seminar
College of Commerce Educational Policy Committee
College of Commerce Teaching Advancement Board
Campus Admissions Committee
University of Illinois Executive Board of Center for Human Resource Management

2000 – 2001 (Illinois):

ILIR Executive Committee
ILIR On-Campus Committee
Economics/ILIR Faculty Search Committee
Economics Advisory Committee to the Head

UNIVERSITY SERVICE (continued)

1999 – 2000 (Illinois):

ILIR Ph.D. Advisory Committee
ILIR Speaker-Scholars Committee
Economics Advisory Committee to the Head
Economics Graduate Admissions Committee
Economics Labor Seminar

1998 – 1999: (On Leave all year at Princeton)

Economics/ILIR Faculty Search Committee

1997 – 1998 (Illinois):

ILIR Speaker-Scholars Committee
ILIR Long Distance Learning Committee
ILIR Admissions and Financial Aid Committee
Economics Faculty Search Committee
Economics Labor Seminar

1996 – 1997 (Illinois):

ILIR Ph.D. Advisory Committee
ILIR Speaker-Scholars Committee
ILIR On-Campus Committee
ILIR Computer Classroom Committee
Economics Advisory Committee to the Head
Economics Graduate Programs Committee
Economics Labor Seminar

1995 – 1996 (Illinois):

ILIR On Campus Committee, Speaker-Scholars Committee, Computer Classroom Committee

PROFESSIONAL SOCIETY SERVICE

Member, Board of Directors of the Society of Certified Professionals, WorldatWork, 2012 -

Member, Board of Directors, WorldatWork, 2009 - 2011

Board Member, WorldatWork Executive Compensation Advisory Board, 2007 - 2009

Member, Strategic Planning Committee, National Academy of Social Insurance, 2007-2008

Member, Awards Committee, Labor and Employment Relations Association, 2006 – 2010

CONFERENCE ORGANIZATION

Emerging Scholars In Compensation Conference, Spring 2013, Ithaca NY (with Linda Barrington)

21st Century Human Resource Management Practices and Their Effects on Firms and Workers:
ILIR Alumni Professorship Symposium, Institute of Labor & Industrial Relations,
University of Illinois, November 11-12, 2005 (with Craig Olson and Kathryn Shaw)

Job Loss: Causes, Consequences, and Policy Responses, Federal Reserve Bank of Chicago,
November 18-19, 2004 (with Kristin Butcher and Daniel Sullivan)

APPENDIX B

Materials Considered Include The Following:

Papers or Books

Adams, J. Stacy, 1965, "Inequity in Social Exchange," in L. Berkowitz, ed., *Advances in Experimental Social Psychology*, 2, 267 – 299.

Card, David, 1999, "The Causal Effect of Education on Earnings," in Orley Ashenfelter and David Card, Eds., *Handbook of Labor Economics*. Volume #a, Elsevier, 1801 – 1863.

Card, David, 2001, "Estimating the Return to Schooling: Progress and Some Persistent Econometrics Problems," *Econometrica*, 69, 1127 – 1160.

Card, David, Alexandre Mas, Enrico Moretti, and Emmanuel Saez, 2012, "Inequality at Work: The Effect of Peer Salaries on Job Satisfaction," *The American Economic Review*, 102(6), 2981-3003.

Cardinal, Ken and Beth Florin, 2012, *Handbook for Conducting Compensation and Benefits Surveys*, WorldatWork Press.

Hallock, Kevin F., 2012, *Pay: Why People Earn What They Earn and What You Can Do Now to Make More*, Cambridge University Press.

Hallock, Kevin F. and Judit P. Torok, 2010, *The 2010 U.S. Top Executive Pay Report*, The Conference Board, New York, N.Y.

Hungerford, Thomas and Gary Solon, 1987, "Sheepskin Effects in the Return to Education," *Review of Economics and Statistics*, 69(1), February, 175 – 177.

Levine, David I., 1993, "Fairness, Markets, and Ability to Pay: Evidence from Compensation Executives," *The American Economic Review*, 83(5), December, 1241-1259.

Lazear, Edward P. and Rosen, Sherwin. 1986, "Rank-Order Tournaments as Optimum Labor Contracts". *Journal of Political Economy*, 89(5), October 1981, 841-864.

Milkovich, George T. and Philip H. Anderson, 1972, "Management Compensation and Secrecy Policies," *Personnel Psychology*, 25, 293-302.

Milkovich, George T., Gerry M. Newman and Barry Gerhart, 2011, *Compensation*, 10th Edition, McGraw-Hill Irwin.

Milkovich, George T., Gerry M. Newman and Barry Gerhart, 2014, *Compensation*, 11th Edition, McGraw-Hill Irwin.

Rosen, Sherwin S., 1986, "The Theory of Equalizing Differences," in Orley Ashenfelter and Richard Layard, Eds., *The Handbook of Labor Economics*, North Holland, 641 – 592.

Spence, Michael, 1973, "Job Market Signaling," *Quarterly Journal of Economics*, 87(3), August, 355-374.

Weiss, Andrew, 1995, "Human Capital vs. Signaling Explanations for Wages," *Journal of Economic Perspectives*, 9(4), 133 – 154.

Data Sources and Other

I was provided access to all deposition transcripts and exhibits in the case. The following are among the materials I considered:

2009 Croner Animation and Visual Effects Survey, January 8, 2009, PIX00001263, exhibit 119.

Document, HR Global Staffing, Manage Offer Module, Develop External Offer, document Version 1.3, February 13, 2009, 76579DOC005963, exhibit 398.8.

Document from Intuit, Talent Acquisition Hiring Plan, INTUIT_007866, exhibit 1107.2.

Document, 2009 Salary Increase & LTI 'Talking Points', PIX00083585, exhibit, 1307.3

Declaration of Ms. Donna Morris of Adobe Systems, September 13, 2011.

Declaration of Ms. Michelle Maupin, January 17, 2013.

Declaration of Mr. Danny McKell, Intel, September 13, 2011.

Declaration of Ms. Donna Morris, September 13, 2011.

Deposition of Mr. David Alvarez, Apple, March 5, 2013

Deposition of Ms. Rosemary Arriada-Keiper, Adobe, March 28, 2013.

Deposition of Mr. Darrin Baja, Apple, March 1, 2013.

Deposition of Mr. Richard Bechtel, Apple, March 7, 2013.

Deposition of Mr. Mark Bentley, Apple, August 23, 2012.

Deposition of Dr. Shona Brown, January 30, 2013.

Deposition of Mr. Patrick Burke, Apple, February 26, 2013.

Deposition of Mr. Steven Burmeister, Apple, March 15, 2013.

Deposition of Dr. Ed Catmull, January 24, 2013.

Deposition of Ms. Michelene Chau, Lucasfilm, February 21, 2013.

Deposition of Mr. Bruce Chizen, Adobe, March 15, 2013.

Deposition of Ms. Sharon Coker, LucasFilm, November 1, 2012.

Deposition of Ms. Deborah Conrad, Intel, November 21, 2012.

Deposition of Mr. Alan Eustace, February 27, 2013.

Deposition of Mr. Chris Galy, Intuit, March 20, 2013.

Deposition of Mr. Randall Goodwin, Intel, March 15, 2013.

Deposition of Mr. Digby Horner, Adobe, March 1, 2013.

Deposition of Ms. Renee James, Intel, March 22, 2013.

Deposition of Ms. Danielle Lambert, Apple, October 2, 2013.

Deposition of Mr. Alex Lintner, Intuit, March 25, 2013.

Deposition of Michelle Maupin, February 12, 2013.

Deposition of Ms. Lori McAdams, August 2, 2012.

Deposition of Mr. Daniel McKell, Intel, March 20, 2013.

Deposition of Ms. Jan van der Voort, February 5, 2013.

Deposition of Ms. Donna Morris, August 21, 2012.

Deposition of Ms. Patricia Murray, Intel, February 14, 2013.

Deposition of Mr. Shantanu Narayen, Adobe, February 28, 2013.

Deposition of Mr. Ron Okamoto, Apple, February 27, 2013.

Deposition of Mr. Paul Otellini, Intel, January 29, 2013.

Deposition of Ms. Stephanie Sheehy, Pixar, March 5, 2013.

Deposition of Mr. Brad Smith, Intuit, February 27, 2013.

Deposition of Mr. Mason Stubblefiled, Intuit, March 29, 2013.

Deposition of Mr. Jeffrey Vijungco, Adobe, October 5, 2012.

Deposition of Mr. Frank Wagner, March 7, 2013.

Deposition of Ms. Sherry Whiteley, Intuit, March 14, 2013.

Email from Ms. Jan van der Voort, July 9, 2007, LUCAS00060705, exhibit 728.1

Email from Ms. Michelle Maupin to Jan van der Voort, May 8, 2008, LUCAS00201069, exhibit 727.3.

Email from Ms. Michelle Maupin, November 4, 2010, LUCAS00198130, exhibit 729.1.

Email from Ms. Donna Morris, Adobe, March 4, 2007, ADOBE_005661, exhibit 1158.

Email from Ms. Donna Morris, Adobe, June 5, 2010, ADOBE_019278, exhibit 1159.

Email of Ms. Donna Morris, Adobe, June 13, 2011, ADOBE_9652, exhibit 1160.

Email of Ms. Donna Morris, Adobe, January 18, 2008, ADOBE_009425, exhibit, 2501.1.

Email of Mr. Shantanu Narayen, Adobe, June 14, 2011, ADOBE_9652, exhibit 1160.

Email from Ms. Vanessa Hall, February 14, 2011, LUCAS00199905-6.

Email from Arnon Geshuri on Saturday March 15, 2008GOOGLE-High_Tech-00379327, exhibit 614.

Email from Ms. Lori McAdams on November 17, 2006, LUCAS00184664, Exhibit 122.

Email from Anuj Chandarana, Google, December 2, 2010, exhibit 1629.

Email from Tiffany Wu, September 7, 2007, Goog-High-Tech-00473658, exhibit 1613.

Email from Mr. Chris Galy, Intuit, March 3, 2010, INTUIT_039790, exhibit 2142.1.

Email from Danny McKell, Intel, February 2005, 76657DOC004599, exhibit 2033.

Email from Mr. Ron Okamoto, Apple, September 17, 2010, 231APPLE099371, exhibit 1130.1.

Email from Mr. Paul Otellini, Intel, January 22, 2010, 76616DOC012164, exhibit 478.1.

Email from Ms. Jocelyn Vosburch, Adobe, October 25, 2010, ADOBE_011976-7, exhibit 1250.1-2.

Email from Mr. Odgen Reid, Intel, April 5, 2005, 76657DOC019264, exhibit, 2035.4.

Email from Mr. Rob York, Apple, on December 17, 2010, 231APPLE039427, exhibit 1376.2.

Google High Tech 00336879 from Deposition of Dr. Shona Brown, January 30, 2013, referencing exhibit 621.

Great Places to Work website: <http://www.greatplacetowork.com/>.

Powerpoint, "Recruiting and Human Resources Update," Board of Directors Meeting, October 19, 2007, LUCAS00013707, exhibit 690.3.

Powerpoint, NPG Human Resources Job Leveling & Pay Equity Review, June 6, 2002, 76583DOC00388, exhibit 392.3.

Powerpoint, NPG Human Resources Job Leveling & Pay Equity Review, June 6, 2002, 76583DOC00388, exhibit 392.5.

Powerpoint on pay design, LUCAS 00188717, exhibit 715.10.

Powerpoint on pay design, LUCAS 00188763, exhibit 715.56.

Powerpoint, Comp Basics for Recruiters, GOOG-HIH-TECH-00036292, exhibit 1606.6.

Powerpoint, Compensation Components Setting a Base Salary, GOOG-HIGH-TECH-00036302, exhibit, 16016.16.

Powerpoint, Intel Base Pay Comparison Report, Support Overview, WW04 2011, 765825DOC001211, exhibit 400.31.

Powerpoint, Salary Planning 2007, Presentation to Engineering Directors, 29 October 2007, exhibit, 1609.11.

Powerpoint called FY11 Preliminary Pay lines development update, Intel, May 5, 2010, 76582DOC000004_000004, exhibit 399.4.

Powerpoint, Candidate Generation, Intuit, December 12, 2006, INTUIT_034255, exhibit 2135.25.

Powerpoint, FY '09 New Hire Equity Guidelines, Intuit, INTUIT_039756, exhibit 2140.4.

Powerpoint, Key Components of Intuit's Total Rewards Portfolio, Intuit, January 7, 2005, INTUIT_52803, exhibit 1760.5.

Powerpoint, Leveraging Compensation and Performance, Intuit, January 7, 2005, exhibit 1761.19.

Powerpoint, INTUIT Total Rewards & Pay Decisions Toolkit, Intuit, May 2005, INTUIT_043560, exhibit 2739.13.

Powerpoint, Focal Decisions 2005, Communications Session for Senior Managers, June 2005, Intuit, INTUIT_052841, exhibit 2740.16.

Powerpoint, Lucasfilm Ltd. Compensation Project Status Executive Review, Lucasfilm, December 7, 2006, LUCAS00027982, exhibit 359.4.

Powerpoint, Global Compensation Project, Lucasfilm Ltd., September 22, 2005, exhibit 944.9.

Powerpoint, PAY FOR PERFORMANCE: 2009 Salary Budget Recommendation, Executive Review, January 21, 2009, Lucasfilm, LUCAS00189288, exhibit 945.13.

Powerpoint, FSM Pre-Focal Analysis 2007, Intel, January 2007, 76583DOC002007, exhibit 393.13.

Powerpoint, FSM Pre-Focal Analysis 2007, Intel, January 2007, 76583DOC002007, exhibit 393.16.

Powerpoint, FSM Pre-Focal Analysis 2007, Intel, January 2007, 76583DOC002007, exhibit 393.28.

Powerpoint, FSM Pre-Focal Analysis 2007, Intel, January 2007, 76583DOC002007, exhibit 393.19.

Powerpoint, GAM SBS UPDATE, 2/11/09, INTEL, 76579DOC00124_000026, exhibit 396.26.

Powerpoint, TMG Non-Tech Job Audit – HR, Intel, August 25th, 2005, 76583DOC008097_000003, exhibit 397.3.

PowerPoint, Base Pay Comparison Report Support Overview WW 042011, Intel, 765825DOC001211, exhibit 400.17.

Powerpoint, Internal Climate, Intel, 76596DOC017025, exhibit 781.16.

Powerpoint, Base Pay Comparison Report Support Overview WW 04 2011, Intel, 765825DOC001211, exhibit 400.25.

Powerpoint, Adobe, Q1 Workforce Metrics, As of 4 March 2005, Adobe, ADOBE_000622, exhibit 210.12.

Powerpoint, Retention/Transition Guidelines, Adobe, June 2008, ADOBE_050724, exhibit 216.5.

Powerpoint, Global Market Analysis, Adobe, exhibit 2486.33.

Powerpoint, 2010 Annual Performance Review, Compensation Training for Managers, December 2009, ADOBE_100614, exhibit 2487.15.

Powerpoint, Compensation Framework, Insuring Global Consistency, Apple, 231APPLE105345, exhibit 1856.4

Powerpoint, Total Rewards Planning, FY07, September 2006, Apple, 231APPLE095052, exhibit 1855.107.

Powerpoint "Base Pay Management Overview," Intel, exhibit 2043.14

Google document, Project Big Bang, Revised Comp Proposal – 9/7/2010, exhibit, 1625.2.

Google document, GOOG-HIGH-TECH-00474908, exhibit 1618.12.

LUCAS00188750-LUCAS00188753, exhibit 959.43-959.46.

Intel spreadsheet printout 76579DOC005152_000017, exhibit 295.17.

Excel spreadsheet, Apple Computer, Inc., 2006 Compensation Analysis, APPLE 231APPLE098912, exhibit 1858.2.

Compensation Analysis and Review Process, Internal Transfer, DRAFT Last Updated 11-23-04, LUCAS00185312, exhibit 716.

Compensation 201 Instructor Guide, Intel, 76583DOC007693, exhibit 2030.65.

Base Salary Structures, Apple, Effective July 15, 2008, 231APPLE009282, exhibit 268.5.

Worldwide Focal 2001 Questions and Answers Intel Confidential, Rev 13, Feb 26, 2001. 76583DOC003753, exhibit 391.4.

WorldatWork: The Total Rewards Association website:
<http://www.worldatwork.org/waw/aboutus/html/aboutus-whatis.html>.
Engineering Job Matrix, Pixar, PIX00049042, exhibit 1305.

High-Tech Employee Antitrust Litigation, Consolidated Amended Complaint, September 2, 2011.

Order by Judge Lucy H. Koh, Case 5:11-cv-02509-LHK Document 382 Filed 04/05/13.

Order by Judge Lucy H. Koh, Case 5:11-cv-02509-LHK Document 531 Filed 10/24/13.

Spreadsheet "Employee Type Count by Employer," provided on February 22, 2013.

Spreadsheet GOOG-HIGH-TECH-00221513.xlsx, tab "Employee Data".

GOOG-HIGH-TECH-00625148 Contains a courtesy reproduction of a compensation spreadsheet titled 2005 Global Ranges - for MQU May-06.xls.

Exhibit 1600.11 "Google 2004 Salary Ranges" Employer Costs for Employee Compensation –

September 2012, United States Bureau of Labor Statistics,
<http://www.bls.gov/news.release/pdf/ecec.pdf>.

LUCAS00184664, exhibit 122

GOOG-HIGH-TECH-00336878, exhibit 621.3

LUCAS00188913 (Exhibit 711.29) for 2008 Salary Structure.

LUCAS00188912 (exhibit 360) for 2006 Salary Structure.

APPENDIX C
FIGURES

Figure 1.
Hypothetical Market Data

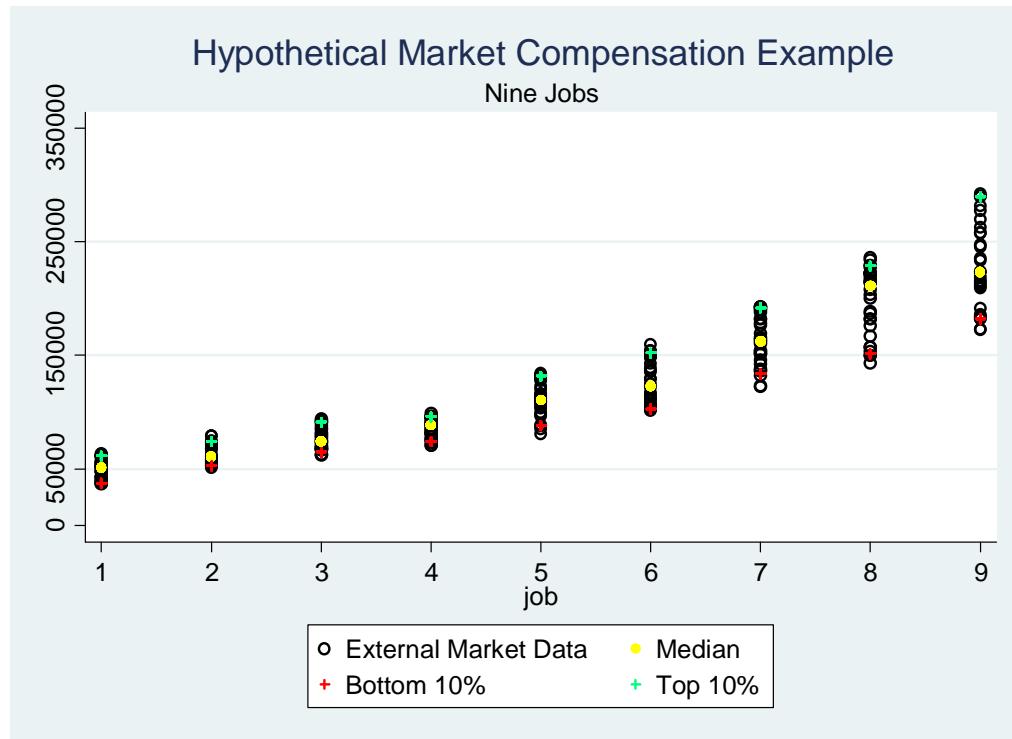
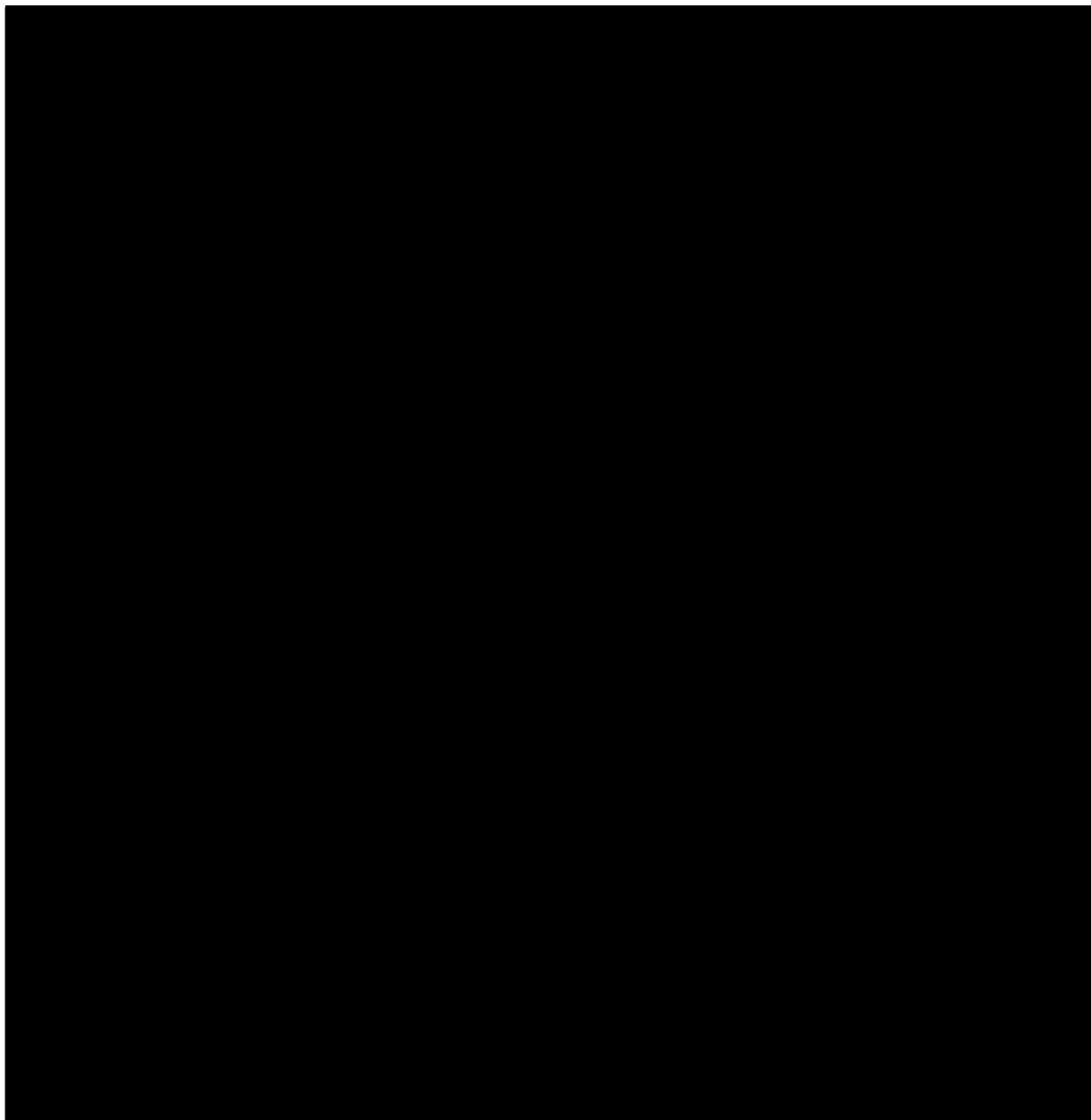
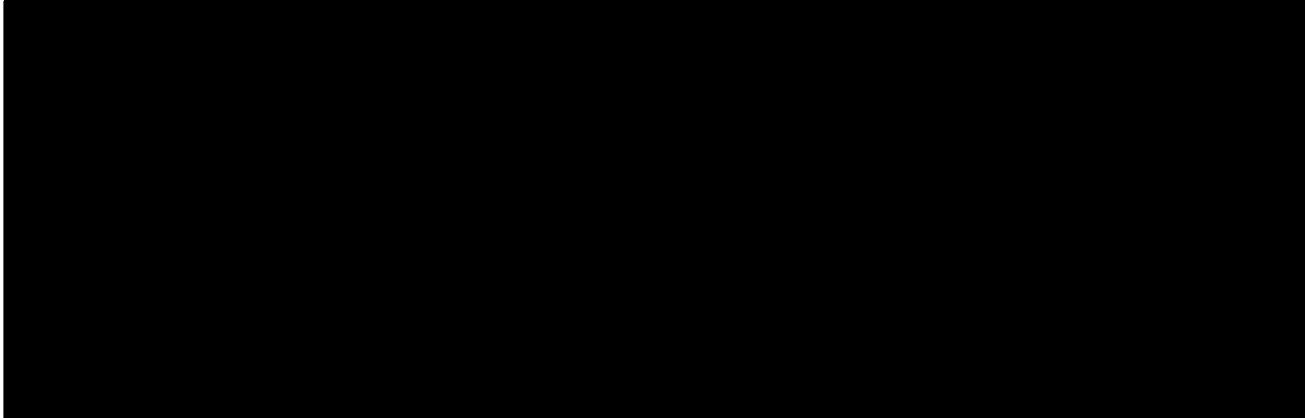


Figure 2.
Example of an Internal Structure from Google in 2004



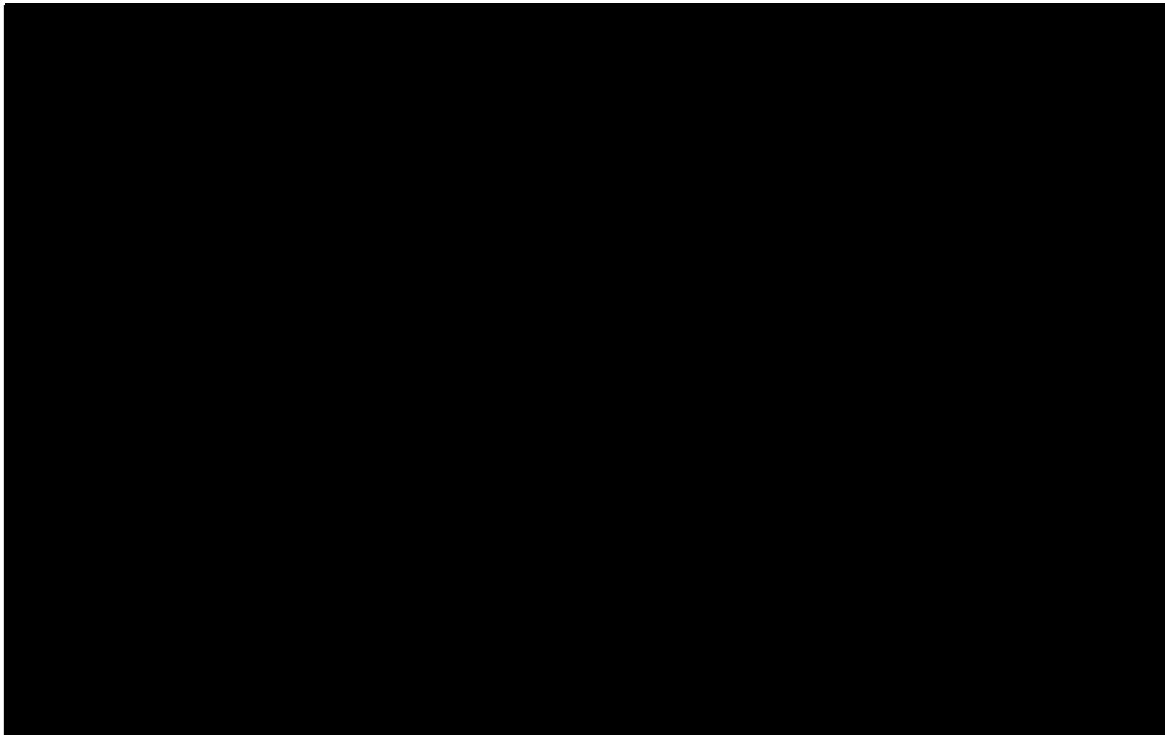
Source: Created from data in spreadsheet GOOG-HIGH-TECH-00221513.xlsx, tab "Employee Data".

Figure 3.
From Apple Proposed FY10 Annual Grant Guidelines



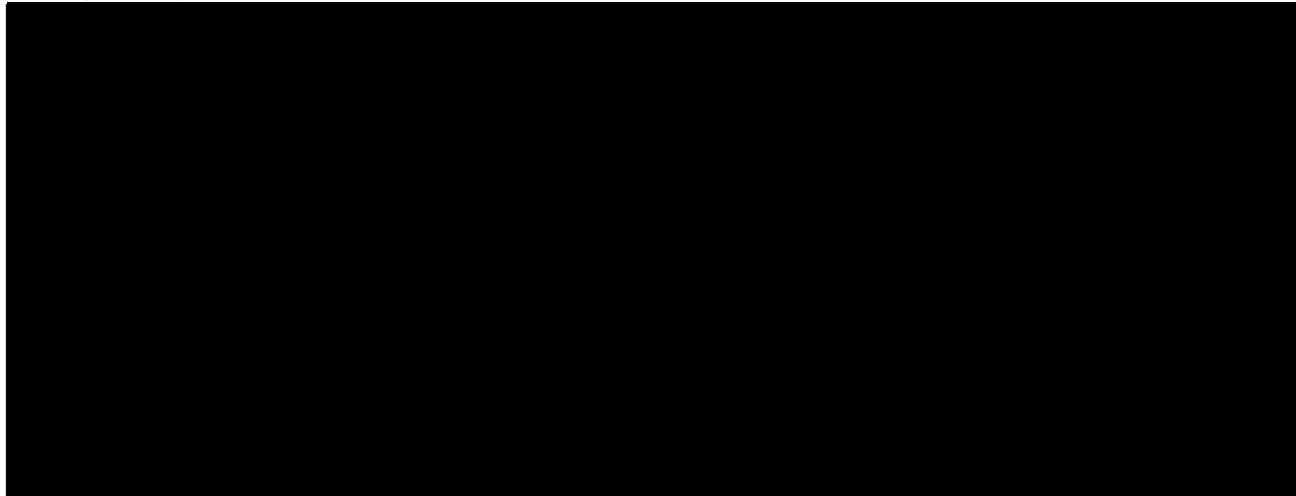
Source: Powerpoint, Apple Inc., Compensation Committee, Apple, August 5, 2009, 231APPLE10067, exhibit 1854.5.

Figure 4.
Apple Salary, Total Cash and Bonus



Source: Excel spreadsheet, Apple Computer, Inc., 2006 Compensation Analysis, APPLE 231APPLE098912, exhibit 1858.2

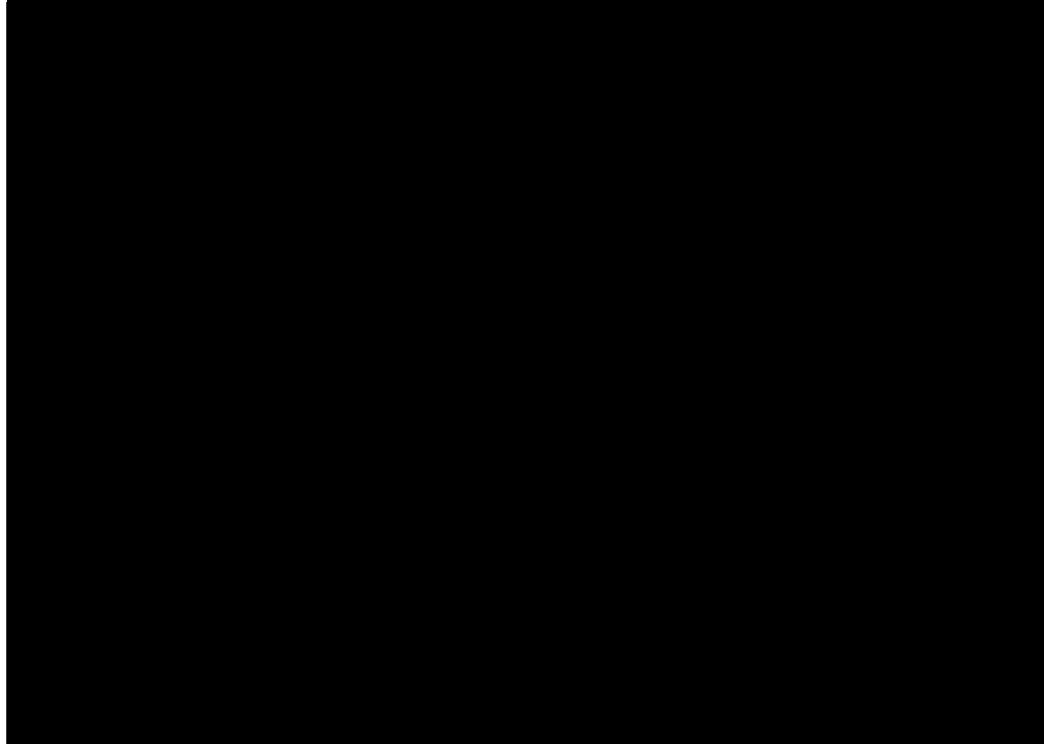
Figure 5.
Apple Salary Structure in Table



Note: Annual Salaries in Thousands.

Source: Base Salary Structures, Apple, Effective July 15, 2008, 231APPLE009282, exhibit 268.5.

Figure 6.
Apple Salary Structure in Graphs

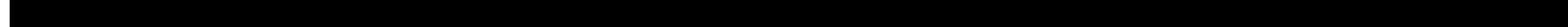


Source: Base Salary Structures, Apple, Effective July 15, 2008, 231APPLE009282, exhibit 268.5.

Figure 7. Google, Merit Increase Matrix

		Pre-adjustment position										
		70%	75%	80%	85%	90%	95%	100%	105%	110%	115%	120%
rating	2.9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3.0	8.0%	5.5%	4.0%	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3.1	10.0%	6.5%	4.5%	3.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3.2	14.0%	8.5%	5.0%	4.5%	4.0%	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3.3	16.0%	10.0%	6.0%	5.5%	4.5%	4.0%	3.0%	0.0%	0.0%	0.0%	0.0%
	3.4	16.0%	12.0%	8.0%	7.0%	6.0%	4.5%	3.5%	0.0%	0.0%	0.0%	0.0%
	3.5	20.0%	14.0%	10.0%	8.5%	7.0%	5.5%	4.0%	3.0%	0.0%	0.0%	0.0%
	3.6	21.0%	15.5%	12.0%	*%	*%	7.0%	5.5%	4.5%	3.0%	0.0%	0.5%
	3.7	22.0%	17.0%	14.0%	12.5%	10.5%	9.0%	7.0%	5.5%	4.0%	0.0%	1.0%
	3.8	23.0%	19.0%	16.0%	14.0%	12.5%	10.5%	8.5%	7.0%	5.0%	3.5%	1.5%
	3.9	23.0%	19.0%	16.5%	15.0%	13.5%	11.5%	10.0%	8.0%	6.0%	3.5%	1.5%
	4.0	23.0%	19.5%	17.0%	15.5%	14.5%	13.0%	11.5%	9.0%	7.0%	4.5%	2.0%
	4.1	23.0%	19.5%	17.0%	15.5%	14.5%	13.0%	11.5%	9.0%	7.0%	4.5%	2.0%
	5.0	23.0%	19.5%	17.0%	15.5%	14.5%	13.0%	11.5%	9.0%	7.0%	4.5%	2.0%

Note: * indicates not legible from original document.



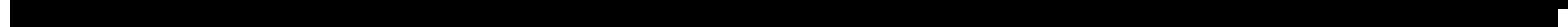
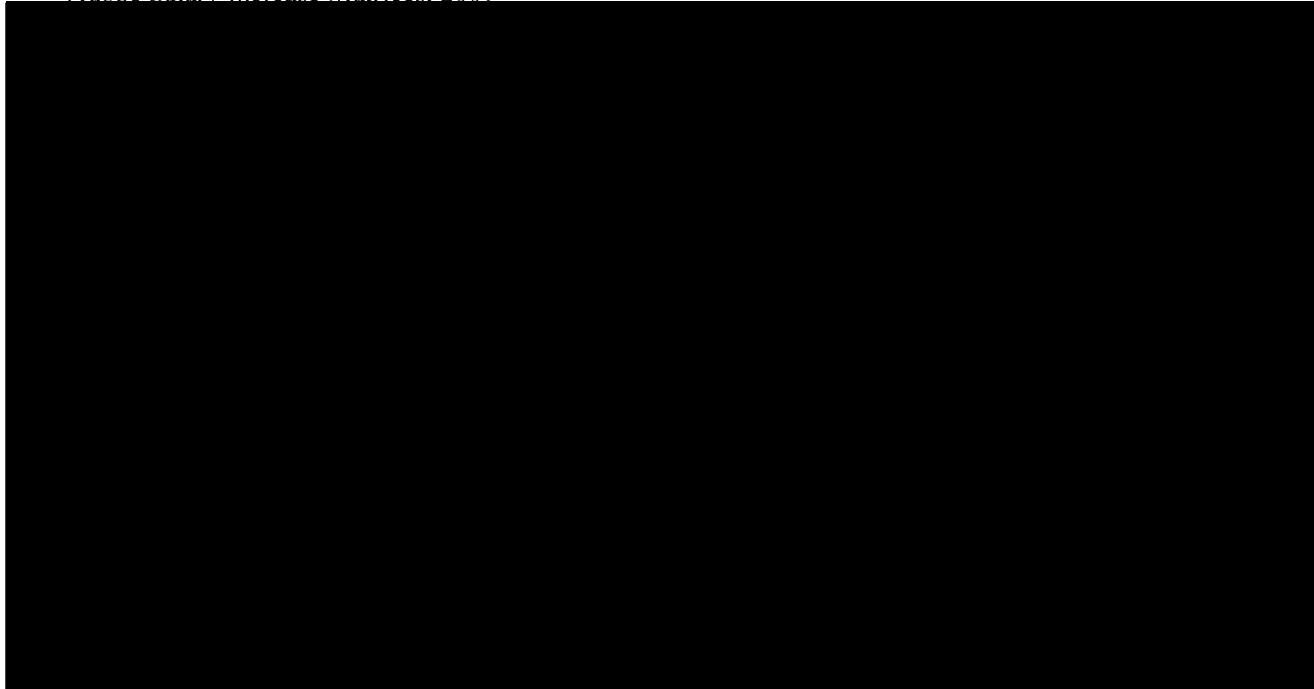


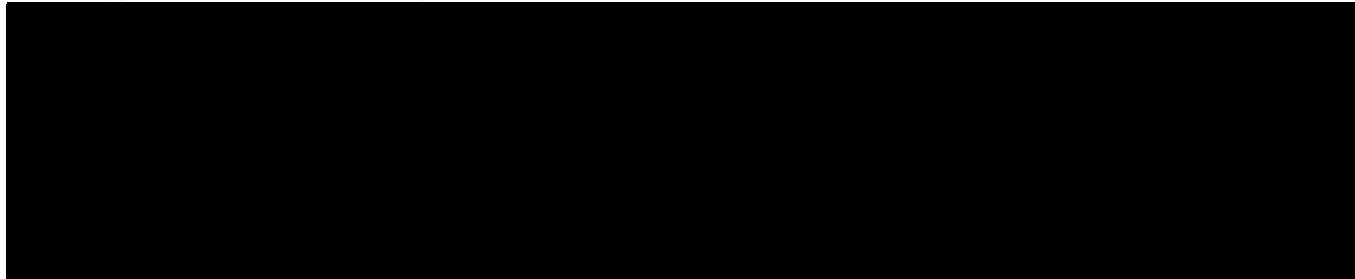
Figure 8.

Adobe Salary Increase Matrices, 2009



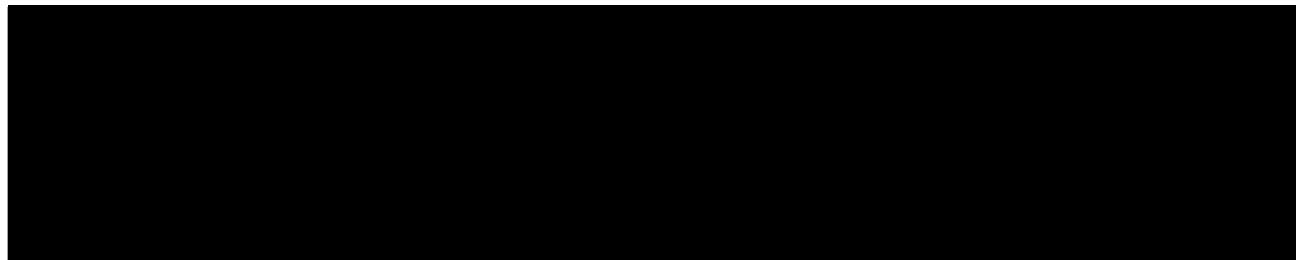
Source: Powerpoint, 2010 Annual Performance Review, Compensation Training for Managers, December 2009, ADOBE_100614, exhibit 2487.15.

Figure 9.
Apple Total Rewards Planning



Source: Powerpoint, Total Rewards Planning, FY07, September 2006, Apple, 231APPLE095052, exhibit, 1855.107.

Figure 10.
Excerpts from Adobe Global Market Analysis
Salary Matrices



Source: Powerpoint, Global Market Analysis, Adobe, exhibit 2486.33.

Figure 11.

From Intel “Applying Pay Report to Focal Decisions”

“Situation: Average Performer is among the highest paid for their comparator groups (e.g., 90th percentile of external market or Intel peers)”

“Action: Freeze Pay, coach ee re: steps to move to next grade as appropriate”

“Situation: Average Performer is highly paid (e.g. above the 75th percentile)”

“Action: Reduce merit increase by 50%”

“Situation: Repeat high performer is paid less than 25th percentile”

“Action: Use surplus budget from actions above to improve pay position”

“Situation: Employee with multiple years in grade is below 50th percentile”

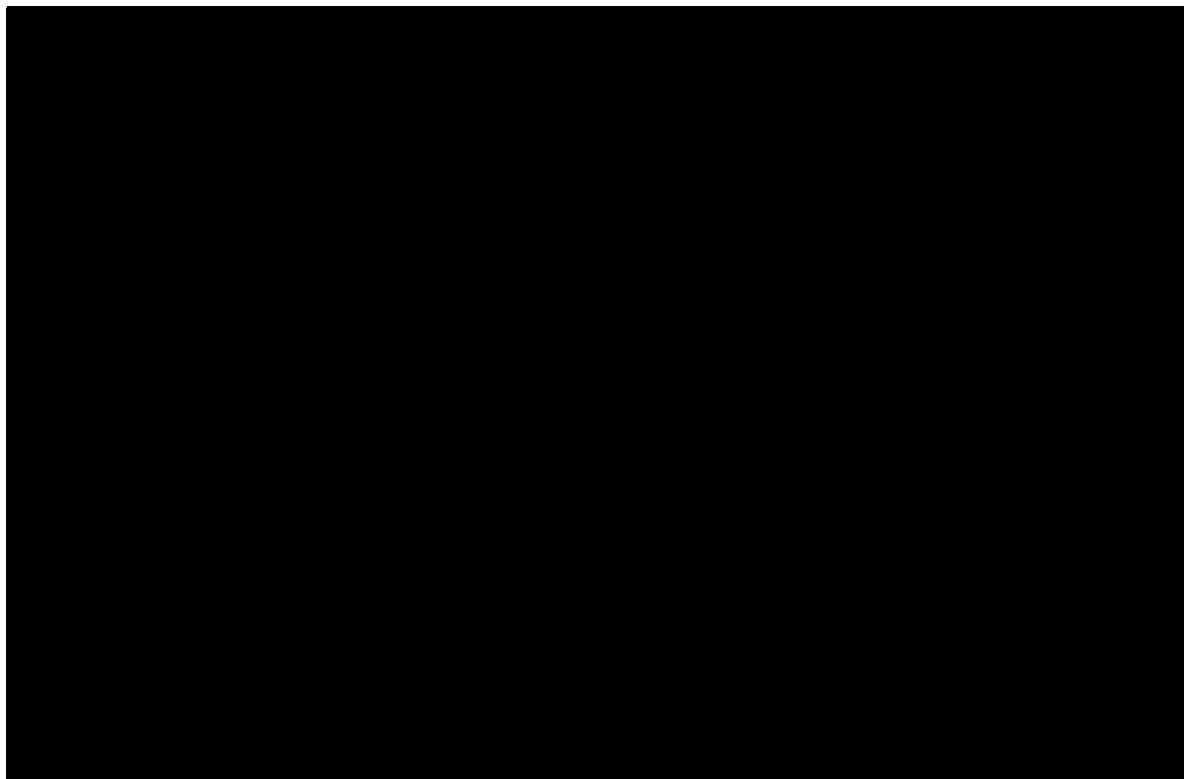
“Action: Use surplus budget from actions above to improve pay position”

“Situation: The Intel Peer Data and External Market data aren’t aligned or no data is displayed”

“Action: Follow Focal tool recommendation or use internal equity to current peer as the main driver for your pay decision”.

Source: PowerPoint, Base Pay Comparison Report Support Overview WW 042011, 765825DOC001211, exhibit 400.17.

Figure 12.

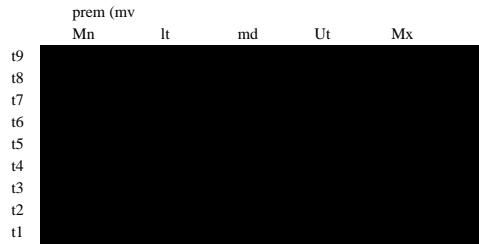


LUCAS00188913 (Exhibit 711.29) for 2008 and LUCAS00188912 (exhibit 360) for 2006.

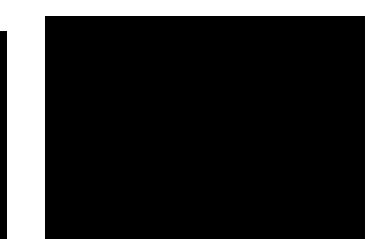
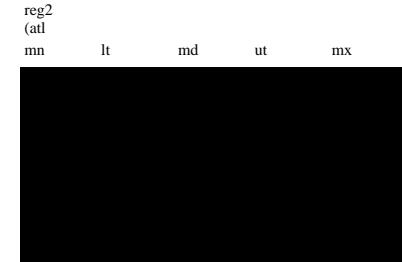
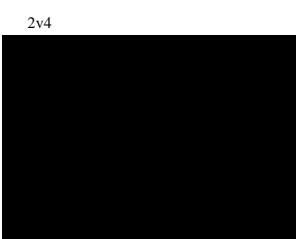
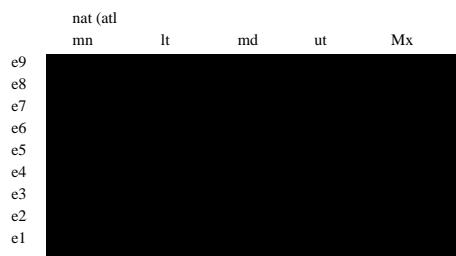
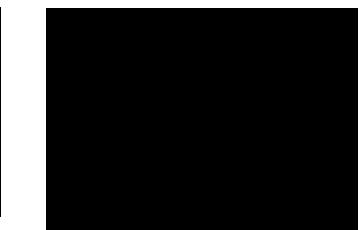
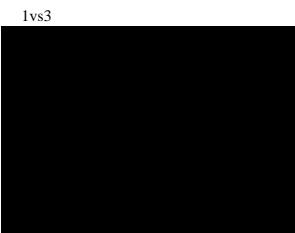
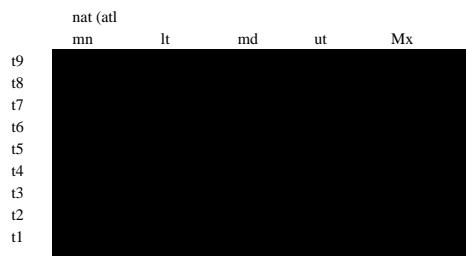
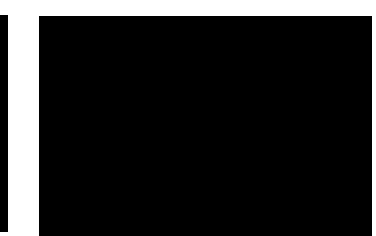
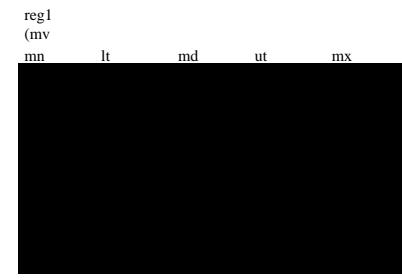
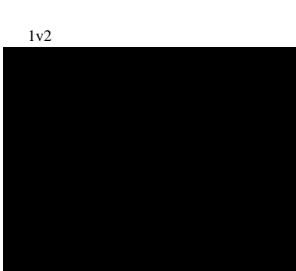
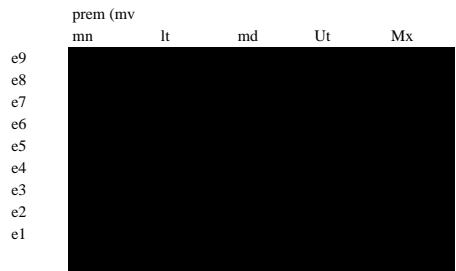
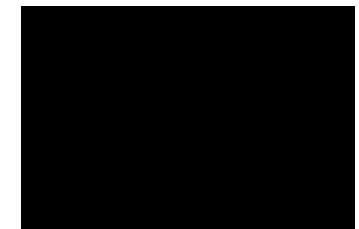
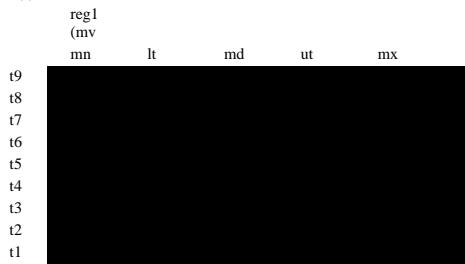
Figure 13

Google Data

2005



2004



Sources: [REDACTED]